

# Study & Evaluation Scheme

of

## Bachelor of Technology (Information Technology)

[Applicable w.e.f. Academic Session 2009-10 till revised]



**TEERTHANKER MAHAVEER UNIVERSITY**

N.H.-24, Delhi Road, Moradabad, Uttar Pradesh-244001

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# TEERTHANKER MAHAVEER UNIVERSITY

(Established under Govt. of U. P. Act No. 30, 2008)

Delhi Road, Bagarpur, Moradabad (U.P)

## Study & Evaluation Scheme of Bachelor of Technology

### SUMMARY

Programme	: B. Tech (Information Technology)
Duration	: Four year full time (Eight Semesters)
Medium	: English
Minimum Required Attendance	: 75 percent
Credit	:

Maximum Credit : 262

Minimum credit required for the degree : 248

Assessment	:	<b>Internal</b>	<b>External</b>	<b>Total</b>
	:	25%	75%	100%

Internal Evaluation (Theory Papers)

Class Test I	Class Test II	Assignment(s)	Other Activity (including attendance)	Total
7.5 Marks	7.5 Marks	5 Marks	5 Marks	25 Marks

Evaluation of Practical/Dissertations & Project Reports

:	<b>Internal</b>	<b>External</b>	<b>Total</b>
:	50	50	100

Duration of Examination

:	<b>External</b>	<b>Internal</b>
:	3 hrs.	2 hrs

To qualify the course a student is required to secure a minimum of 40 % marks in aggregate including the semester end examination and teachers continuous evaluation.(i.e. both internal and external).

A candidate who secures less than of 40% of marks in a course shall be deemed to have failed in that course. The student should have at least 50% marks in aggregate to clear the semester. In case a student has more than 40% in each course, but less than 50% overall in a semester, he/she shall re-appear in courses where the marks are less than 50% to achieve the required aggregate percentage of 50% in the semester.

### ***Question Paper Structure***

1. The question paper shall consist of eight questions. Out of which first question shall be of short answer type (not exceeding 50 words) and will be compulsory. Question No. 1 shall contain 8 parts representing all units of the syllabus and students shall have to answer any five (weightage 3 marks each).
2. Out of the rest seven questions, student shall be required to attempt any five questions. There will be minimum one and maximum two questions from each unit of the syllabus. The weightage of Question No. 2 to 8 shall be 12 marks each.

**Study & Evaluation Scheme**  
**Programme: B. Tech. (Information Technology)**  
**Semester I**

S. No.	Course Code	Subject	Periods			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	EAS101	Mathematics-I	3	2	-	4	25	75	100
2	EAS102/	Physics	3	2	-	4	25	75	100
	EAS103	Chemistry							
3	EME101/	Engineering Mechanics	3	2	-	4	25	75	100
	EME102	Manufacturing Science							
4	ECS101	Computer Basics	3	2	-	4	25	75	100
5	EEE101/	Basic Electrical Engineering	3	2	-	4	25	75	100
	EEC101	Basic Electronic Engineering							
6	EHM101	English Communication-I	3	-	-	3	25	75	100
7	EAS151/	Physics (Lab)	-	-	4	2	50	50	100
	EAS152	Chemistry (Lab)							
8	EME151/	Engineering Mechanics(Lab)	-	-	4	2	50	50	100
	EME152	Engineering Drawing (Lab)							
9	ECS151	Computer Basics (Lab)	-	-	4	2	50	50	100
10	EEE151/	Basic Electrical Engineering (Lab)	-	-	4	2	50	50	100
	EEC151	Basic Electronic Engineering (Lab)							
11	ECS171	Discipline & General Proficiency	-	-	-	2	100	-	100
		<b>Total</b>	<b>18</b>	<b>10</b>	<b>16</b>	<b>33</b>	<b>450</b>	<b>650</b>	<b>1100</b>

**Semester II**

S. No.	Course Code	Subject	Periods			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	EAS201	Mathematics-II	3	2	-	4	25	75	100
2	EAS202/	Physics	3	2	-	4	25	75	100
	EAS203	Chemistry							
3	EME201/	Engineering Mechanics	3	2	-	4	25	75	100
	EME202	Manufacturing Science							
4	EAS204	Environmental Studies	3	2	-	4	25	75	100
5	EEE201/	Basic Electrical Engineering	3	2	-	4	25	75	100
	EEC201	Basic Electronic Engineering							
6	EHM201	English Communication-II	3	-	-	3	25	75	100
7	EAS251/	Physics (Lab)	-	-	4	2	50	50	100
	EAS 252	Chemistry (Lab)							
8	EME251/	Engineering Mechanics (Lab)	-	-	4	2	50	50	100
	EME252	Engineering Drawing (Lab)							
9	EME253	Workshop Practice (Lab)	-	-	4	2	50	50	100
10	EEE251/	Basic Electrical Engineering (Lab)	-	-	4	2	50	50	100
	EEC251	Basic Electronic Engineering (Lab)							
11	ECS271	Discipline & General Proficiency	-	-	-	2	100	-	100
		<b>Total</b>	<b>18</b>	<b>10</b>	<b>16</b>	<b>33</b>	<b>450</b>	<b>650</b>	<b>1100</b>

### Semester III

S. No.	Course Code	Subject	Periods			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	ECS301	Discrete Mathematics	3	2	-	4	25	75	100
2	ECS302	OOPS and C++ Programming	3	2	-	4	25	75	100
3	EEC302	Digital Electronics and Computer Organization	3	2	-	4	25	75	100
4	ECS303	Operating System	3	2	-	4	25	75	100
5	EHM302	Organizational Behavior	3	2	-	4	25	75	100
6	EHM301	English Communication -III	3	-	-	3	50	50	100
7	ECS351	OOPS and C++ Programming (Lab)	-	-	4	2	50	50	100
8	EEC351	Logic Circuit (Lab)	-	-	4	2	50	50	100
9	ECS352	Operating System (Unix) (Lab)	-	-	4	2	50	50	100
10	ECS371	Discipline & General Proficiency	-	-	-	2	100	-	100
		<b>Total</b>	<b>18</b>	<b>10</b>	<b>12</b>	<b>31</b>	<b>425</b>	<b>575</b>	<b>1000</b>

### Semester IV

S. No.	Course Code	Subject	Periods			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	ECS401	Theory of Computation	3	2	-	4	25	75	100
2	ECS402	Data Base Management System	3	2	-	4	25	75	100
3	ECS403	Data Structure using C++ Programming	3	2	-	4	25	75	100
4	ECS404	Software Engineering	3	2	-	4	25	75	100
5	ECS405	Computer Based Numerical & Statistical Techniques	3	2	-	4	25	75	100
6	EHM401	English Communication -IV	3	-	-	3	50	50	100
7	ECS451	Data Base Management System (Lab)	-	-	4	2	50	50	100
8	ECS452	Data Structure Using C++ (Lab)	-	-	4	2	50	50	100
9	ECS453	Computer Based Numerical & Statistical Techniques (Lab)	-	-	4	2	50	50	100
10	ECS471	Discipline & General Proficiency	-	-	-	2	100	-	100
		<b>Total</b>	<b>18</b>	<b>10</b>	<b>12</b>	<b>31</b>	<b>425</b>	<b>575</b>	<b>1000</b>

### Semester V

S. No.	Course Code	Subject	Periods			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	ECS502	Computer Architecture	3	2	-	4	25	75	100
2	ECS503	Analysis and Design of Algorithm	3	2	-	4	25	75	100
3	ECS504	Computer Network	3	2	-	4	25	75	100
4	ECS505	ERP Solutions	3	2	-	4	25	75	100
5	EHM502	Accounting and Financial Management	3	2	-	4	25	75	100
6	EHM501	English Communication V	3	-	-	3	50	50	100
7	ECS552	Analysis and Design of Algorithm (Lab)	-	-	4	2	50	50	100
8	ECS553	Computer Network(Lab)	-	-	4	2	50	50	100
9	ECS554	Oracle E-Business suit (ERP Lab)	-	-	4	2	50	50	100
10	ECS591	Industrial Training	-	-	-	4	100	100	200
11	ECS571	Discipline & General Proficiency	-	-	-	2	100	-	100
		<b>Total</b>	<b>18</b>	<b>10</b>	<b>16</b>	<b>35</b>	<b>525</b>	<b>675</b>	<b>1200</b>

### Semester VI

S. No.	Course Code	Subject	Periods			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	ECS602	Java Programming	3	2	-	4	25	75	100
2	ECS603	Computer Graphics	3	2	-	4	25	75	100
3	ECS604	Microprocessor	3	2	-	4	25	75	100
4	ECS609	Software Project Management	3	2	-	4	25	75	100
<b>Lab</b>									
5	ECS652	Java Programming(Lab)	-	-	4	2	50	50	100
6	ECS653	Computer Graphics (Lab)	-	-	4	2	50	50	100
7	ECS654	Software Project Management (Lab)	-	-	4	2	50	50	100
<b>Elective –Select any one course</b>									
8	ECS605	E-Commerce	3	2	-	4	25	75	100
	ECS606	Real Time Operating System	3	2	-	4	25	75	100
	ECS607	Soft Computing	3	2	-	4	25	75	100
	ECS608	Distributed System	3	2	-	4	25	75	100
9	EHM601	English Communication-VI	3	-	-	3	50	50	100
10	ECS671	Discipline & General Proficiency	-	-	-	2	100	-	100
		<b>Total</b>	<b>18</b>	<b>10</b>	<b>16</b>	<b>31</b>	<b>425</b>	<b>575</b>	<b>1000</b>

## Semester VII

S. No.	Course Code	Subject	Periods			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	ECS701	Advanced Java	3	2	-	4	25	75	100
2	ECS705	Linux Internals	3	2	-	4	25	75	100
3	ECS712	Software Testing	3	2	-	4	25	75	100
<b>Lab</b>									
4	ECS751	Advanced Java (Lab)	-	-	4	2	50	50	100
5	ECS752	Linux(Lab)	-	-	4	2	50	50	100
6	<b>Elective* I – Select any one course</b>								
	ECS703	Digital Image Processing	3	2	-	4	25	75	100
	ECS707	Management Information System	3	2	-	4	25	75	100
<b>Elective* I– Lab- Same one as selected from column above</b>									
7	ECS753	Digital Image Processing (Lab)	-	-	4	2	50	50	100
	ECS754	Management Information System (Lab)	-	-	4	2	50	50	100
8	<b>Elective* II – Select any one course</b>								
	ECS702	Advance Computer Network	3	2	-	4	25	75	100
	ECS709	Information Storage and retrieval	3	2	-	4	25	75	100
	ECS710	Cryptography and Network Security	3	2	-	4	25	75	100
<b>Elective* II– Lab- Same one as selected from column above</b>									
9	ECS791	Industrial Training	-	-	4	4	100	100	200
10	EHM701	English Communication-VII	3	-	-	3	50	50	100
11	ECS771	Discipline & General Proficiency	-	-	-	2	100	-	100
		<b>Total</b>	<b>18</b>	<b>10</b>	<b>16</b>	<b>35</b>	<b>525</b>	<b>675</b>	<b>1200</b>

\* The student has to opt the respective Lab of elective subject.

### Semester VIII

S. No.	Course Code	Subject	Periods			Credit	Evaluation Scheme		
			L	T	P		Internal	External	Total
1	ECS801	Web Technology (Design and Architecture using .NET)	3	2	-	4	25	75	100
2	ECS802	Mobile Computing	3	2	-	4	25	75	100
3	ECS805	Multimedia and Animation	3	2	-	4	25	75	100
<b>Lab</b>									
4	ECS852	Web Technology (Lab)	-	-	4	2	50	50	100
5	ECS856	Multimedia and Animation (Lab)	-	-	4	2	50	50	100
<b>Elective* I – Select any one course</b>									
6	ECS806	Digital System Design	3	2	-	4	25	75	100
	ECS807	Data Warehousing and Data Mining	3	2	-	4	25	75	100
<b>Lab* – any one</b>									
7	ECS857	Digital System Design (Lab)	-	-	4	2	50	50	100
	ECS858	Data Mining and Data Warehousing (Lab)	-	-	4	2	50	50	100
<b>Elective II – any one</b>									
8	ECS803	Simulation and Modeling	3	2	-	4	25	75	100
	ECS804	Embedded System	3	2	-	4	25	75	100
9	EHM801	English Communication -VIII	3	-	-	3	50	50	100
10	ECS891	Project Work	-	-	4	4	100	100	200
11	ECS871	Discipline & General Proficiency	-	-	-	-	100	-	100
<b>Total</b>			<b>18</b>	<b>10</b>	<b>20</b>	<b>33</b>	<b>525</b>	<b>675</b>	<b>1200</b>

\* The student has to opt the respective Lab of elective subject.

**Note:**

**L – Lecture**  
1L = 1Hr

**T- Tutorial**  
1T= 1 Hr

**P- Practical**  
1P=1 Hr

**C-Credits**  
1C = 1Hr of Theory Paper  
2 Hrs of Practical/Tutorial

## B. Tech. – Semester I MATHEMATICS-I

Course Code: EAS101

L	T	P	C
3	2	0	4

**Objective:** The objective behind the study of this subject is to solve all problems related to matrix, calculus, and vectors.

### Course Contents

#### Unit I

**Matrices:** Elementary row and column transformation, Rank of matrix, Linear dependence, Consistency of linear system of equations, Characteristic equation, Caley- Hamition Theorem, Eigen values and Eigen vectors, Diagonalisation, Complex and unitary matrices.  
(Lectures 08)

#### Unit II

**Differential Calculus-I:** Leibnitz theorem, Partial differentiation, Euler's theorem, Curve tracing, Change of variables, Expansion of function of several variables  
(Lectures 08)

#### Unit III

**Differential Calculus-II:** Jacobian, Approximation of errors, Extrema of functions of several variables, Lagrange's method of multipliers (Simple applications).  
(Lectures 08)

#### Unit IV

**Multiple Integrals:** Double and triple integral, Change of order, Change of variables, Beta and Gamma functions, Application to area, volume, Dirichlet integral and applications.

(Lectures 08)

#### Unit V

**Vector Calculus:** Point functions, Gradient, divergence and curl of a vector and their physical interpretations, Line, Surface and Volume integrals, Greens, Stokes and Gauss divergence theorem.

(Lectures 08)

### Text Books

1. Narayan Shanti, *A Text Book of Matrices*, S. Chand
2. Prasad C., *Mathematics for Engineers*, Prasad Mudralaya

### Reference Books

1. Kreyszig E., *Advanced Engineering Mathematics*, Wiley Eastern
2. Grewal B.S., *Higher Engineering Mathematics*, Khanna Publishers.
3. Piskunov N, *Differential & Integral Calculus*, Moscow Peace Publishers.



## B. Tech. – Semester I/II PHYSICS

Course Code: EAS102/202

L	T	P	C
3	2	0	4

**Objective:** The objective behind this subject is to know about basic physics like interference, diffraction, lasers etc.

### Course Contents

#### Unit I

**Relativistic Mechanics:** Inertial and Non- inertial Frames, Michelson-Morley Experiment, Postulates of Special Theory of Relativity, Galilean and Lorentz Transformation, Length Contraction and Time Dilation, Addition of Velocities, Mass Energy Equivalence and Variation of Mass with Velocity. **(Lectures 08)**

#### Unit II

**Interference:** Coherent Sources, Conditions of Interference, Fresnel's Bi-prism Experiment, Displacement of Fringes, Interference in Thin Films – Wedge Shaped Film, Newton's Rings.

**Diffraction:** Single and n-Slit Diffraction, Diffraction Grating, Raleigh's Criterion of Resolution, Resolving Power of Telescope, Microscope and Grating. **(Lectures 08)**

#### Unit III

**Polarization:** Phenomenon of Double Refraction, Ordinary and Extra-ordinary Rays, Nicol Prism, Production and Analysis of Plane, Circularly and Elliptically Polarized Light, Fresnel Theory, Optical Activity, Specific Rotation, Polari meter.

**Laser:** Principle of Laser Action, Einstein's Coefficients, Construction and Working of He-Ne and Ruby Laser. **(Lectures 08)**

#### Unit IV

**Electromagnetic:** Ampere's Law and Displacement Current, Maxwell's Equations in Integral and Differential Forms, Electromagnetic Wave Propagation in Free Space and Conducting Media, Poynting Theorem. **(Lectures 08)**

#### Unit V

**Magnetic Properties of Materials:** Basic Concept of Para- , Dia and Ferro-Magnetism, Langevin's Theory of Diamagnetism, Phenomenon of Hysteresis and Its Applications

**X-Rays:** Diffraction of X-Rays, Bragg's Law, Practical Applications of X-Rays, Compton Effect. **(Lectures 08)**

### Text Books

1. Resnick Robert, *Introduction to Special Theory of Relativity*, Wiley
2. Beiser Aurthur, *Perspectives of Modern Physics*.
3. Ghatak A.K., *Optics*.

### Reference Book

1. Wehr Richards & Adiaiv, *Physics of Atoms*.
2. Svelto O, *Lasers*.
3. Griffith D.J., *Electrodynamics*.

## B. Tech. – Semester I/II CHEMISTRY

Course Code: EAS103/203

L	T	P	C
3	2	0	4

**Objective:** The objective behind this subject is to study about basic chemistry, bonding, pollution etc.

### Course Contents

#### Unit I

Molecular theory of diatomic hetero-molecules, Bond theory of bonding in metals, Hydrogen bonding. (Lectures 08)

#### Unit II

**Solid state Chemistry:** Radius Ratio Rule, Space lattice (only cubes), Type of unit cell, Bragg's Law, Calculation of Density of unit cell. One & Two Dimensional solids, graphite as two dimensional solid and its conducting properties. Fullerene & its applications. Structures of the following polymers, viz, Natural and synthetic rubbers, Polyamide and Polyester fibers, polymethylmethacrylate, poly acrylonitrile and polystyrene. A brief account of conducting polymers (polypyrrole & polytriphenyl) & their applications. Order & Molecularity of reactions. First & Second order reactions. Energy of activation. Phase Rule: Its application to one component system (Water). Equilibrium Potential, electrochemical cells (galvanic & concentration cells), Electrochemical theory of corrosion & protection of corrosion. (Lectures 08)

#### Unit III

**Water Chemistry:** Hardness of water, softening of water by Lenny-S process & Reverse osmosis. Treatment of boiler feed water by Calgon process, Zeolites and ion-exchange resins. Classification of fuels, Coal, Biomass & Biogas. Determination of gross and net calorific values using Bomb Calorimeter. (Lectures 08)

#### Unit IV

**Environmental pollution:** Types of pollution & pollutants, Air Pollution. Formation and depletion of ozone, smog and Acid rain.

**Toxic chemicals in Environment:** Basic concepts, Brief idea about the environmental impact of toxic chemicals specially, CO,  $\text{N}_2\text{O}$ , SO<sub>x</sub>, O<sub>3</sub>, Pesticides, Environmental Management (Lectures 08)

#### Unit V

**Lubricants:** Introduction to lubricants, Mechanism of lubrication, Classification of lubricants, Flash and fire points, Selection of lubricants. (Lectures 08)

### Text Books

1. Morrison & Boyd, *Organic Chemistry*
2. Lee I.D., *Inorganic Chemistry*

### Reference Books

1. Barrow, *Physical Chemistry*
2. Manahan, *Environmental Chemistry*

**B. Tech. – Semester I/II**  
**ENGINEERING MECHANICS**

**Course Code: EME101/201**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The objective is to study about mechanics, force system, torsion, beams, trusses, frames etc.

**Course Contents**

**Unit I**

**Force system and Analysis:** Basic concept: Laws of motion. Transfer of force to parallel position. Resultant of planer force system. Free Body Diagrams, Equilibrium and its equation.

**Friction:** Introduction, Laws of Coulomb friction, Equilibrium of bodies involving dry friction-Belt Friction. **(Lectures 08)**

**Unit II**

**Structure Analysis: Beams;** Introduction, Shear force and Bending Moment, shear force and Bending Moment Diagram for statically determinate beams.

**Trusses:** Introduction, Simple Trusses, Determination of Forces in simple trusses members, methods of joints and method of section. **(Lectures 08)**

**Unit III**

**Stress and Strain Analysis: Simple stress and strain;** Introduction, Normal shear stresses, stress-strain diagrams for ductile and brittle materials, Elastic constants, one dimensional loading of members of varying cross sections, strain Energy. **(Lectures 08)**

**Unit IV**

**Compound stress and strains:** Introduction, state of plane stress, Principal stress and strain, Mohr's stress circle.

**Pure Bending of Beams:** Introduction, Simple Bending theory, Stress in Beams of different cross sections. **(Lectures 08)**

**Unit V**

**Torsion:** Introduction, Torsion of Shafts of circular section, Torque and Twist, Shear stress due to Torque. **(Lectures 08)**

**Text Books**

1. Ryder G. H., *Strength of Materials*
2. Singer F. L., *Strength of Materials*

**Reference Books**

1. Timoshenko, *Strength of Materials*
2. Shames, *Engineering Mechanics*
3. Schaum, *Outline Series*.

## B. Tech. – Semester I/II MANUFACTURING SCIENCE

Course Code: EME102/202

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** the objective behind this subject is to create awareness among students about manufacturing process like casting, metal forming, welding etc.

### Course Contents

#### Unit I

**Basic Metals & Alloys:** Properties and Applications, Properties of Materials: Strength, elasticity, stiffness, malleability, ductility, brittleness, toughness, and hardness. Elementary ideas of fracture fatigue & creep. **(Lectures 08)**

#### Unit II

Introduction to Metal Forming & Casting Process and its applications,

**Metal Forming:** basic metal forming operations & uses of such as: Forging, Rolling, Wire & Tube-drawing/making and Extrusion, and its products/application. Press-work & die & punch assembly, cutting and forming, its application. Hot-working versus cold-working.

Casting: Pattern & allowance. Molding sands its desirable properties. Mould making with the use of core. Gating system, Casting defects & remedies. Cupola Furnace, Die-casting and its uses.

**(Lectures 08)**

#### Unit III

Introduction to machining & Welding and its applications.

**Machining:** basic principles of Lathe-machine and operations performed on it. Basic description of machines and operations of Shaper-Planner, Drilling, Milling & Grinding.

**Welding:** Importance & basic concepts of welding, classification of welding processes, Gas-welding, types of flames. Electric-Arc welding. Resistance welding, Soldering, & Brazing and its uses. **(Lectures 08)**

#### Unit IV

**Introduction & Orthographic Projection:** Graphics as a tool to communicate ideas, Lettering and Dimensioning, Construction of geometrical figures like pentagon and hexagon. Principles of orthographic projections, Principal and auxiliary planes, first and third angle projections. Projection of points, Lines and solids. **(Lectures 08)**

#### Unit V

Principles of isometric projection, Isometric projection using box and offset methods. **(Lectures 08)**

#### Text Books

1. Hajra & Bose, *Workshop Technology, Vol 1 & 2*, Roy Media Promoters
2. Bhatt, N.D., *Elementary Engineering Drawing*, Charohtar Publishing

#### Reference Books

1. Raghuvanshi, B.S., *Workshop Technology, Vol 1 & 2*, Dhanpat Rai & Sons
2. Laxmi Narayan & Vaish W, *A Text Book of Practical Geometrical Drawing*

## B. Tech. – Semester I COMPUTER BASICS

Course Code: ECS101

L	T	P	C
3	2	0	4

**Objective:** The objective is to know the basics of computers & C programming language.

### Course Contents

#### Unit I

**Concepts in Computer & Programming; Computer Appreciation:** Definition of Electronic Computer, History, Generations, Characteristic and Application of Computers, Classification of Computers, Computer Hardware, CPU, RAM/ROM, Various I/O devices, Peripherals, Storage Media, Software Definition, Role and Categories, Firmware and Human ware. **(Lectures 08)**

#### Unit II

**Programming Language Classification & Program Methodology; Computer Languages:** Generation of Languages, Translators, Interpreters, Compilers, Flow Charts, Dataflow Diagram, Assemblers, Introduction to 4GLs, Software Development Methodology, Life Cycles, Software Coding, Testing, maintenance.

**Digital Devices and Basic Network Concepts; Digital Fundamentals:** Various codes, decimal, binary, hexadecimal conversion, floating point numbers, Need for Data Transmission over distances, Types of Data Transmission, Media for Data Transmission (UTP, Optical, and Wireless).

**Data Communication & Networks:** Computer Networks, Networking of computers- Introduction of LAN and WAN. Network Topologies, Basic Concepts in Computer Networks, Client-server Architecture, and Mobile Communication. **(Lectures 08)**

#### Unit III

**Internet and Web Technologies; Internet & World Wide Web:** Hypertext Markup Language, DHTML, WWW, Gopher, FTP, Telnet, Web Browsers, Net Surfing, Search Engines, Email. **(Lectures 08)**

#### Unit IV

**Concepts in Operating System, Office Tools and Data Management; Introductory concepts in operating system & Data Management:** Elementary Concepts in Operating System, textual Vs GUI Interface, Introduction to DOS, MS Windows, MS office Tools, MS WORD, MS EXCEL, MS Power Point. **(Lectures 08)**

#### Unit V

IT Industry Trends, Careers and Applications in India Basic Awareness of NICNET and ERNET. Application of IT to Areas like E Commerce, electronic governance, Multimedia, and Entertainment.

**Information Representation:** Introduction to Information representation in Digital Media, Text, image, graphics, Animation, Audio, Video etc., Introduction to JPEG, MPEG, MHEG, MP3 & AVI **(Lectures 08)**

### Text Books

1. Yadav, D S, *Foundations of IT*, New Age, Delhi
2. Curtin, *Information Technology: Breaking News*, Tata McGraw Hill
3. Rajaraman, *Introduction to Computers*, Prentice-Hall India

### Reference Books

1. Nelson, *Data Compression*, BPB.
2. Peter Nortans, *Introduction to Computers*, TME
3. Leon & Leon, *Fundamental of Information Technology*, Vikas Publishing
4. Kanter, *Managing Information System*,
5. CIS Tems, *Internet: An Introduction*, Tata McGraw Hill.

**B. Tech. – Semester I/II**  
**BASIC ELECTRICAL ENGINEERING**

**Course Code: EEE101/201**

L	T	P	C
3	2	0	4

**Objective:** The objective is to know the basics of electrical engineering, machines and their applications.

**Course Contents**

**Unit I**

**D.C. Network Theory:** Circuit theory concepts-Mesh and node analysis. Network Theorems- Superposition theorem. Thevenin's theorem, Norton's theorem, Maximum Power Transfer theorem, Star Delta transformation. (Lectures 08)

**Unit II**

**Steady State Analysis of A.C. Circuits:** Sinusoidal and phasor representation of voltage and current: single phase A.C. circuit behaviour of resistance, inductance and capacitance and their combination in series & parallel and power factor, series parallel resonance-band width and quality factor: magnetic circuit. (Lectures 08)

**Unit III**

**Measuring Instruments:** Construction and principle of operation of voltage and current measuring instruments; introduction to power and energy meters.

**Three Phase A.C. Circuits:** Star-Delta connections, line and phase voltage/current relations, three phase power and its measurement. (Lectures 08)

**Unit IV**

**Transformer:** Principle of operation, types of construction, phasor diagram, equivalent circuit, efficiency and voltage regulation of single phase transformer, O.C. and S.C. tests.

**D.C. Machines:** Principle of electromechanical energy conversion, types of D.C. machines, E.M.F. equation, Magnetization and load characteristics, losses and efficiency, Starter and speed control of D.C. Motors, their applications. (Lectures 08)

**Unit V**

**Three phase induction Motor:** Principle of operation, types and methods of starting, slip-torque characteristics, applications.

**Synchronous Machines:** Principle of Operation of Alternator and synchronous motor

**Single phase Motors:** Principle of operation and methods of starting of induction motor, Stepper motor and Universal motor. (Lectures 08)

**Text Books**

1. Toro V. Del, *Principles of Electrical Engineering*, Prentice-Hall International.
2. Hayt W.H. & J.E. Kemmerly, *Engineering Circuit Analysis*, McGraw Hill.

**Reference Books**

1. Nagrath I.J., *Basic Electrical Engineering*, Tata McGraw Hill.
2. Fitzgerald A.E., D.E., Higginbotham & A Grabel, *Basic Electrical Engineering*, McGraw Hill.
3. Cotton H., *Advanced Electrical Technology*, Wheeler Publishing.

**B. Tech. – Semester I/II**  
**BASIC ELECTRONIC ENGINEERING**

**Course Code: EEC101/EEC201**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The objective is to know the basics of electronics engineering like components, devices and their applications.

**Course Contents**

**Unit I**

**PN Junction:** Introduction to PN-Junction, depletion layer, v-I characteristics Diode Ratings (average current, peak-inverse voltage) p-n junction as rectifiers (half wave and full wave), filter, calculation of ripple factor and load regulation, clipping and clamping circuits. Zener diode and its application as shunt regulator. **(Lectures 08)**

**Unit II**

**Bipolar Junction Transistor (BJT):** Basic construction, transistor action, CB, CE and CC configurations, input/output characteristics, Biasing of transistors, Fixed bias, emitter bias, potential divider bias, Graphical analysis of CE amplifier, concept of Voltage gain current gain,  $\lambda$ -parameter model (low frequency). Computation of  $A_i$ ,  $A_v$ ,  $R_i$ ,  $R_o$  of single transistor CE amplifier configuration. **(Lectures 08)**

**Unit III**

**Field Effect Transistor (FET):** Basic construction of JFET, Principle of working, concept of pinch-off maximum drain saturation current, input and transfer characteristics, Characteristics equation, CG, CS and CD Configuration, fixed and self biasing of JFET amplifier Introduction of MOSFET, Depletion and Enhancement type MOSFET- Construction, Operation and Characteristics. **(Lectures 08)**

**Unit IV**

**Operational Amplifier (Op-Amp):** Concept of ideal operational amplifier, ideal and practical Op-Amp parameters, inverting, non-inverting and unity gain configurations. Applications of Op-Amp as adders, difference amplifiers, integrators and differentiator. **(Lectures 08)**

**Unit V**

**Switching Theory:** Number system, conversion of bases(decimal, binary, octal and hexadecimal numbers), Adder & Subtraction, BCD numbers, Seven Segment Display, Boolean Algebra, Logic gates, Concept of universal gates, Canonical forms, minimization using K-Map. **(Lectures 08)**

**Text Books**

1. Millman & Halkias, *Integrated Electronics*, McGraw Hill
2. Millman & Halkias, *Electronics Devices and Circuits*, McGraw Hill
3. Morris Mano M., *Digital Design*.

**Reference Books**

1. Sedra and Smith, *Microelectronic Circuits*
2. Gayakwad, R A, *Operational Amplifiers and Linear Integrated Circuits*, PHI
3. Chattopadhyay D and P C Rakshit, *Electronics Fundamentals and Applications*, New Age International.



## B. Tech. – Semester I ENGLISH COMMUNICATION-I

Course Code : EHM101

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

**Objective:** The objective is to study the English in professional manner like technical writing, sentence, paragraph, articles etc.

### Course Contents

#### Unit I

**Pre-Requisites of Technical Written Communication:** Vocabulary Building: Homophones (Words Similar in sound but different in Meanings); Word-formation; One-Word substitute; New & Select Vocabulary Building (about 500 words).  
**(Lectures 06)**

#### Unit II

**Functional Grammar:** Patterns and Correct usage (Parts of speech); Syntax Concord; Prepositions; Articles.  
**(Lectures 06)**

#### Unit III

**Requisites of Good Sentence and Paragraph Writing:** Requisites of Good Sentence Writing; Paragraph Writing; Unity, Coherence and Emphasis; Development of Paragraph: Inductive Order, Deductive Order, Spatial, Linear, Chronological Orders etc. with Emphasis on Argumentative & Expository Writing. Language Learning through Thematic and Value based Critical Reading (Non-Detailed Text Study).  
**(Lectures 06)**

#### Unit IV

Study of following Short Stories for making the Students acquaint with the styles of great Writers of World:

**O.H. Henry:** The Last Leaf

**R.N. Tagore:** The Renunciation

**M.R. Anand:** The Barber's Trade Union

**(Lectures 06)**

#### Unit V

**Dimensions of Spoken English:** Stress, Intonation, Rhythm, Phone, Allophones, Phonetic Transcription, Listening, Reading & Comprehension of Speech and Reproduction of Response.  
**(Lectures 06)**

#### Texts Books

1. Singh R.P, *An Anthology of English Short Stories*, Oxford University Press, New Delhi.
2. Hornby A.S., *Guide to Patterns & Usage in English*, Oxford University Press, New Delhi
3. Martin & Wren, *High I English Grammar & Composition*, S.Chand. Co., Delhi

#### Reference Books

1. Ruther Ford A., *Basic Communication Skills*, Person Education, New Delhi.
2. *Functional Skills in Language & Literature*, Oxford University Press, New Delhi

#### \*Note:

#### Internal Marking

There shall be a continuous evaluation and the marking would be as follows.

#### Marks 50

**Part A – 25 marks** Would be based on the pattern of internal evaluation of all theory papers viz two internal examinations of 7.5 marks each, regular assessment through tutorials and class assignments – 5 marks and attendance -5 marks.

**Part B – 25 marks** Students are required to read the daily word and sentence written on the White Board at the entrance of the college along with its meaning.

**10 marks** –Random class test would be held in the Classes which will be based on the words and sentences written on the white board only.

**15 marks**- Would be based on a project report that the student would write and would present the same to the committee comprising of three members to be appointed by the Director of the college.

The committee will assess the performance of the student on the basis of project done and presentation made before committee.



**B. Tech. – Semester I/II**  
**PHYSICS (LAB)**

**Course Code: EAS151/251**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

1. Wave Length of Sodium Lamp by Newton's ring.
2. Determine the wave length of Sodium light by Fresnel's Bi-prism.
3. Determine of the Specific Rotation of the Cane sugar solution with the help of Polari meter.
4. Determine the wave length of the sodium lamp by Michelson interferometer.
5. PN junction characteristic Apparatus
6. High resistance by Leakage method.
7. Energy Band gap by four probe method.
8. Determine Magnetic field using Stewart and Gee's apparatus.
9. Determine the frequency of A.C. mains by means of a Sonometer.
10. Hall Effect experiment.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE 10 MARKS)</b>	<b>QUIZ ( 5 MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

**B. Tech. – Semester I/II**  
**CHEMISTRY (LAB)**

**Course Code: EAS152/252**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**(Any 10 experiments of the following or such experiments suitably designed)**

**List of Experiments**

1. Determination of alkalinity in the given water sample.
2. Determination of temporary and permanent hardness in water sample using EDTA as standard solution.
3. Determination of available chlorine in bleaching powder.
4. Determination of chloride content in the given water sample by Mohr's method.
5. To determine pH of the solution using pH meter and pH-metric titration.
6. Determination of Equivalent weight of Iron by the chemical displacement method.
7. Viscosity of an addition polymer like polyester by Viscometer.
8. Determination of the dissolved oxygen present in a water sample.
9. To find the melting and Eutectic Point for a two component system by using method of cooling curve.
10. To determine the viscosity of a given sample of a lubricating oil using Redwood Viscometer.
11. To determine flash point of the given lubricating oil by Penskey –Marten's apparatus.
12. To find chemical oxygen demand of waste water sample by potassium dichromate.
13. Determination of temporary and permanent hardness in water sample using complexometric method.
14. Determination of iron content in the given sample using external indicator.
15. Determination of strength of given HCL solution by titrating against N/10 Standard sodium hydroxide solution.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE 10 MARKS)</b>	<b>QUIZ ( 5 MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

**B. Tech. – Semester I/II**  
**ENGINEERING MECHANICS (LAB)**

**Course Code: EME151/251**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**(Any 10 experiments of the following or such experiments suitably designed)**

**List of Experiments**

1. To conduct the tensile test and determine the ultimate tensile strength, percentage elongation for a steel specimen.
2. To determine the compression test and determine the ultimate compressive strength for a specimen
3. To conduct the Impact-tests (Izod / Charpy) on Impact-testing machine to find the toughness.
4. To determine the hardness of the given specimen using Vicker/ Brinell/Rockwell hardness testing machine.
5. Friction experiment(s) on inclined plane and/or on screw-jack.
6. Worm & worm-wheel experiment for load lifting.
7. Torsion of rod/wire experiment.
8. Experiment on Trusses.
9. Study of 2-stroke and 4 –stroke I.C.E. models.
10. To determine the velocity ratio, mechanical advantage & efficiency of a single purchase crab apparatus & draw a graph of load vs effort, mechanical advantage and efficiency.
11. To determine the velocity ratio, mechanical advantage & efficiency of a double purchase crab apparatus.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE 10 MARKS)</b>	<b>QUIZ ( 5 MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

**B. Tech. – Semester I/II**  
**ENGINEERING DRAWING (LAB)**

**Course Code: EME152/252**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Course Contents**

**Introduction:** Graphics as a tool to communicate ideas, Lettering and dimensioning, Construction of geometrical figures like pentagon and hexagon.

**Orthographic Projection:** Principles of orthographic projections, Principal and auxiliary planes, First and Third angle projections. Projection of points. Pictorial view. Projection of lines parallel to both the planes. Parallel to one and inclined to other, Inclined to both the planes. Application to practical problems. Projection of solid in simple position, Axis or slant edge inclined to one and parallel to other plane, Solids lying on a face or generator on a plane. Sectioning of solids lying in various positions, True shape of the section. Development of lateral surfaces, sheet metal drawing.

**Isometric Projection:** Principles of isometric projection, Isometric projection using box and offset methods.

**Reference Books**

1. Bhatt. N.D., *Elementary Engineering Drawing*, Charohtar Publishing.
2. Laxmi Narayan V & Vaish W., *A Text Book of Practical Geometry on Geometrical Drawing*.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

EXPERIMENT (25 MARKS)	ATTENDANCE 10 MARKS)	QUIZ ( 5 MARKS)	VIVA (10 MARKS)	TOTAL INTERNAL ( 50 MARKS)
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

## B. Tech. – Semester I COMPUTER BASICS (LAB)

Course Code: ECS151

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### Course Contents

1. Write a Program (WAP) to calculate temperature in Fahrenheit to Celsius using formula  $C = (F - 32) / 1.8$ .
2. WAP to calculate Sum & average of N numbers.
3. WAP to calculate roots of quadratic equation  $ax^2 + bx + c = 0$ .  
 $b^2 - 4ac > 0$  real root  
 $b^2 - 4ac < 0$  imaginary root
4. WAP to convert integer arithmetic to a given number of day and month.
5. WAP to find maximum out of 3 numbers a, b & c.
6. WAP to find minimum out of 3 numbers a, b & c.
7. WAP to find  $e^b$ .
8. WAP to find factorial of positive integer.
9. WAP to find sum of series up to n number,  $2 + 5 + 8 + \dots + n$ .
10. WAP to print all the number between 1 to 100 which are dividing by 7.
11. WAP to generate Fibonacci series up to n.
12. WAP to find position in class first = 360, second = 240, third = 120 otherwise fail. Read marks of 3 subjects.
13. Write a function to calculate area of circle.
14. Write an iterative function to calculate factorial of given number.
15. Write a recursive function to calculate factorial of given number.
16. WAP to find whether number is prime or not.
17. WAP to find even & odd up to a given limit.
18. WAP to find that the enter character is a letter or digit.
19. WAP to find addition of two matrix of n\*n order.
20. WAP to find multiplication of two matrix of n\*n order.
21. WAP to add 6 digit numbers in even case & multiple 6 digit number in odd case.
22. WAP to find even or odd up to a given limit n.
23. WAP to find whether a given no is palindrome or not.
24. WAP that uses a function to sort an array of integer.
25. WAP to illustrate the concept of structure.
26. WAP to joining the 2 string.
27. WAP to comparing of 2 strings.
28. WAP to illustrate the properties of static variable.
29. WAP to find length of string.
30. WAP to illustrate the pointer.

### Evaluation of Practical Examination:

#### Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

#### Evaluation Scheme

EXPERIMENT (25 MARKS)	ATTENDANCE 10 MARKS)	QUIZ ( 5 MARKS)	VIVA (10 MARKS)	TOTAL INTERNAL ( 50 MARKS)
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#### External Evaluation (50 marks)

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

**B. Tech. – Semester I/II**  
**BASIC ELECTRICAL ENGINEERING (LAB)**

**Course Code: EEE151/251**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

1. To study the Super position theorem.
2. To study the reciprocity theorem.
3. To study the Maximum Power theorem.
4. To study the Norton's theorem.
5. To study the Thevenin theorem.
6. To study the KCL & KVL.
7. Determination of Parameter and losses in a Single Phase Transformer OC & SC test.
8. Speed control of D.C Shunt Motor.
9. Block Rotor of test of 3 Ø Induction Motor.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE 10 MARKS)</b>	<b>QUIZ ( 5 MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

**B. Tech. – Semester I/II**  
**BASICS ELECTRONIC ENGINEERING (LAB)**

**Course Code: EEC151/251**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

1. V-I characteristics of P-N junction diode
2. Application of diode as clipper clamper
3. Half wave & Full wave rectifier
4. I/P & O/P characteristics of transistor in CB configuration
5. I/P & O/P characteristics of transistor in CE configuration
6. Verify the truth table of half adder & full adder
7. OP-amp as inverting & non Inverting amplifier using IC 741)
8. OP-amp as differentiator & Integrator
9. Zener of diode as a Shunt Regulator

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE 10 MARKS)</b>	<b>QUIZ ( 5 MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

**B. Tech. – Semester I**  
**DISCIPLINE & GENERAL PROFICIENCY**

**Course Code: ECS171**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Guidelines**

There shall be continuous evaluation of the student on the following broad parameters:

1. Observance of dress code
2. Participation in Conferences /Workshops / Seminars
3. Attendance in guest lectures, invited talks and special technical sessions organized from time to time..
4. Participation in community projects including NCC and NSS.
5. Exhibiting team spirit in different activities of the University and College organized from time to time.
6. Observance of rule & regulations in the College/University.
7. Behaviour in hostel mess and hostel.
8. Performance and awards received in different events (sports/ co-curricular activities) organized at College / University and other level.
9. General behaviour

The above is an indicative list of parameters on which the students shall be continuously evaluated. The college may evaluate the student on the specific parameters by informing them through a notice displayed on the notice board before evaluation.

There shall be no external examination for this course; however the marks shall be included for calculation of cumulative Performance Index (CPI)



## B. Tech. – Semester II MATHEMATICS- II

Course Code: EAS201

L	T	P	C
3	2	0	4

**Objective:** The objective behind the study of this subject is to solve all problems related to Diff. equation, different series.

### Course Contents

#### Unit I

**Differential Equations:** Ordinary differential equations of first order, Exact differential equations, Linear differential equations of first order, Linear differential equations of nth order with constant coefficients, Complementary functions and particular integrals, Simultaneous linear differential equations, Solutions of second order differential equations by changing dependent and independent variables, Method of variation of parameters, Applications to engineering problems (without derivation).  
(Lectures 08)

#### Unit II

**Series Solutions and Special Functions:** Series solutions of ODE of 2<sup>nd</sup> order with variable coefficients with special emphasis to differential equations of Legendre, and Bessel. Legendre polynomials, Bessel's functions and their properties.  
(Lectures 08)

#### Unit III

**Laplace Transform:** Laplace transform, Existence theorem, Laplace transform of derivatives and integrals, Inverse Laplace transform, Unit step function. Dirac delta function, Laplace transform of periodic functions, Convolution theorem, Application to solve simple linear and simultaneous differential equations.  
(Lectures 08)

#### Unit IV

**Fourier Series and Partial Differential Equations:** Periodic functions, Trigonometric series, Fourier series of period  $2p$ , Euler's formulae, Functions having arbitrary period, Change of interval, Even and odd functions, Half range sine and cosine series.

Introduction of partial differential equations, Linear partial differential equations with constant coefficients of 2<sup>nd</sup> order and their classifications – parabolic, elliptic and hyperbolic with illustrative examples.  
(Lectures 08)

#### Unit V

**Applications of Partial Differential Equations:** Method of separation of variables for solving partial differential equations, Wave equation up to two dimensions, Laplace equation in two-dimensions, Heat conduction equations up to two-dimensions, Equations of transmission Lines.  
(Lectures 08)

### Text Books

1. Kreyszig E., *Advanced Engineering Mathematics*, Wiley Eastern
2. Grewal, B.S., *Higher Engineering Mathematics*, Khanna Publication.

### Reference Books

1. Prasad C. *Advanced Mathematics for Engineers*, Prasad Mudralaya
2. *A Textbook of Differential Equations*, Pitamber Publications.

## B. Tech. – Semester II ENVIRONMENTAL STUDIES

Course Code: EAS204

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** To create awareness among students about ecology, environment & various type of pollutions.

### Course Contents

#### Unit I

**General:** Definition, Scope, Segments of Environment and its Multidisciplinary Nature Some Major Environmental Problems (Lectures 08)

#### Unit II

**Ecology And Environment:** Concept of an Ecosystem- its components and functions Tropic Levels- Producer, Consumer and Decomposer Energy and Nutrient Flow in an Ecosystem, Biogeochemical Cycles, Food Chain, Food Web and Ecological Pyramid. (Lectures 08)

#### Unit III

**Air Pollution:** Various segments of Atmosphere and their Significance Classification of Pollutants in Air – their sources, toxic effects, sampling and analysis, Stationary and Mobile Sources and their Control Photochemical and Sulphurous Smog, Acid Rain Indoor Air Quality Greenhouse Effect and Global Warming Ozone Layer – Its Depletion and Control Measures. (Lectures 08)

#### Unit IV

**Water Pollution:** Water Resources of the Earth and Indian Scenario Point and non-Point sources of Pollution; Various Pollutants and their Toxic Effects Water Quality- DO and its significance, BOD and COD and their measurement Water Quality in Rivers and Lakes- DO sag, Eutrophication, Thermal Stratification, Mixing in Lakes and its Consequences, Designated Best Use (CPCB Criteria) Portability of Water- Municipal Water Supply Wastewater – Characteristics, Primary and Secondary Treatment Rainwater Harvesting; Natural Resources and Bio-Diversity, Renewable and non-Renewable Resources, Sustainable Development Forest Resources, Deforestation- causes and effects Bio-Diversity- Its Importance, Threats and Conservation; Dams and Reservoirs- Their Benefits and Problems (Lectures 08)

#### Unit V

A Brief Introduction To Noise Pollution, Soil Pollution And Solid Waste Management Measures for Protection of Environment Development with protection of environment- social issues. Legal frame work for environmental protection in India. Brief introduction to Acts for environmental protection.

**Project Preparation** (Lectures 08)

### Text Books

1. Masters, G.M., *Introduction to Environmental Engineering and Science*, Prentice Hall India Pvt. Ltd.
2. Odum, E.P., *Fundamentals of Ecology*, W. B. Saunders Co.

### Reference Books

1. Bryant, P.J., *Biodiversity and Conservation*, Hypertext Book
2. Tewari, Khulbe & Tewari, *Textbook of Environment Studies*, I.K. Publication
3. Trivedi R.K., *Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol I and II*, Environment Media

## B. Tech. – Semester II ENGLISH COMMUNICATION- II

Course Code: EHM201

L	T	P	C
3	0	0	3

**Objective:** The objective of the course is to edify the technical writing skills through writing of official letters and scientific research papers.

### Course Contents

#### Unit I

Technical Communication Nature; Origin and Scope; Feature and General Writing; Significance; Style: Objective Style as Contrary to Literary Composition. Forms of Technical Communication, Distinction between formal and informal writing. Essay Writing. (Lectures 06)

#### Unit II

**Reports:** Types, Significance, Structure & Style of Report;

**Writing of Reports:** Project, Thesis, Dissertation Writing;

(Lectures 06)

#### Unit III

**Technical Paper & Scientific Article Writing:** Elements, Methods & Technical Objectives; Technical Proposal: Nature, Divisions, Kinds, and Uses. (Lectures 06)

#### Unit IV

**Business Correspondence:** Principles; Features; Sales and Credit Letters: Letters of Enquiry, Quotation, Order, Claim, Complaint and Adjustment letters, Bio-Data Making, Resumes/Job Application Processing. (Lectures 06)

#### Unit V

Language Learning through Thematic and Value based Critical Reading (Non-Detailed Text Study):

A Study of following Value –Oriented Essays:

S. Radhakrishnan : The Gandhian Outlook

J.B. Priestley : Making Writing Simple

C.E.M. Joad : The Civilization of Today

(Lectures 06)

### Texts Books

1. Singh R.P, *An Anthology of English Essays*, Oxford University Press, New Delhi
2. Singh R P, *An Anthology Short Stories*, Singh R P, OUP, New Delhi.
3. Krishna Mohan and Mamta Banerjee, *Developing Communication Skills*, Macmillan India Ltd., Delhi.

### Reference Books

1. Arora V.N. et al, *Improve Your Writing*, OUP, Delhi
2. Mohan K. & Sharma R.C, *Business Correspondence of Report Writing*, TMH, New Delhi.

### \*Note:

#### Internal Marking

There shall be a continuous evaluation and the marking would be as follows.

#### Marks 50

**Part A – 25 marks** Would be based on the pattern of internal evaluation of all theory papers viz two internal examinations of 7.5 marks each, regular assessment through tutorials and class assignments – 5 marks and attendance -5 marks.

**Part B – 25 marks** Students are required to read the daily word and sentence written on the White Board at the entrance of the college along with its meaning.

**10 marks** –Random class test would be held in the Classes which will be based on the words and sentences written on the white board only.

**15 marks**- Would be based on a project report that the student would write and would present the same to the committee comprising of three members to be appointed by the Director of the college.

The committee will assess the performance of the student on the basis of project done and presentation made before committee.

**B. Tech. – Semester II**  
**WORKSHOP PRACTICE (LAB)**

**Course Code: EME253**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

**Carpentry Shop:**

1. Study of tools & operations and carpentry joints.
2. Simple exercise using jack plane.
3. To prepare half-lap corner joint, mortise & joints.
4. Simple exercise on woodworking lathe.

**Fitting Bench Working Shop:**

1. Study of tools & operations
2. Simple exercises involving fitting work.
3. Make perfect male-female joint.
4. Simple exercises involving drilling/tapping

**Black Smithy Shop:**

1. Study of tools & operations
2. Simple exercises base on black smithy operations such as upsetting, drawing down, punching, bending & swaging.

**Welding Shop:**

1. Study of tools & operations of Gas welding & Arc welding
2. Simple butt and Lap welded joints.
3. Oxy-acetylene flame cutting.

**Sheet-metal Shop:**

1. Study of tools & operations.
2. Making Funnel complete with „soldering“ .
3. Fabrication of tool-box, tray, electric panel box etc.

**Machine Shop:**

1. Study of machine tools and operations.
2. Plane turning.
3. Step turning
4. Taper turning.
5. Threading

**Foundry Shop:**

1. Study of tools & operations
2. Pattern making.
3. Mould making with the use of a core.
4. Casting

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE 10 MARKS)</b>	<b>QUIZ ( 5 MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

**B. Tech. – Semester II**  
**DISCIPLINE & GENERAL PROFICIENCY**

**Course Code: ECS271**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Guidelines**

There shall be continuous evaluation of the student on the following broad parameters:

1. Observance of dress code
2. Participation in Conferences /Workshops / Seminars
3. Attendance in guest lectures, invited talks and special technical sessions organized from time to time..
4. Participation in community projects including NCC and NSS.
5. Exhibiting team spirit in different activities of the University and College organized from time to time.
6. Observance of rule & regulations in the College/University.
7. Behaviour in hostel mess and hostel.
8. Performance and awards received in different events (sports/ co-curricular activities) organized at College / University and other level.
9. General behaviour

The above is an indicative list of parameters on which the students shall be continuously evaluated. The college may evaluate the student on the specific parameters by informing them through a notice displayed on the notice board before evaluation.

There shall be no external examination for this course; however the marks shall be included for calculation of cumulative Performance Index (CPI)

## B. Tech. Semester III DISCRETE MATHEMATICS

Course Code: ECS301

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** Discrete mathematics has become popular in recent decades because of its applications to computer science. Concepts and notations from discrete mathematics are useful in studying and describing objects and problems in computer algorithms and programming languages, and have applications in cryptography, automated theorem proving, and software development.

### Course Contents

#### Unit I

**Propositional Calculus:** Propositions, Truth tables, Logical Equivalence, Logical implications, Algebra of propositions, Conditional propositions, Converse, Inverse, Contra positive, Bi-conditional statements, Negation of Compound statements, Tautologies and Contradiction, Normal Form, Arguments, Fallacies, Quantifiers, Mathematical Induction.

(Lectures 8)

#### Unit II

**Boolean Algebra and Circuits:** Boolean Algebra, Boolean Expression, Logic Gates, Logic Circuits, Boolean Functions, Sum of Product and Product of Sum Forms, Canonical Forms, Simplification of functions using K-Map.

(Lectures 8)

#### Unit III

**Set Theory:** Basic concepts of Set theory, some operations on sets, Venn diagram, Basic Set identities, Cartesian product.

**Relation:** Definition, Types of relation, Pictorial representation of relation, Composition of Relation, Equivalence relation.

**Function:** Definition, Classification of function, Types of function (one to one, many to one, into, onto, injective), Composition of function, Inverse function, Identity function.

(Lectures 8)

#### Unit IV

**Combinatorics:** Fundamental principles, Permutation and Combination, Recurrence Relation, Generating Function, Binomial Theorem.

(Lectures 8)

#### Unit V

**Graphs and Trees:** Introduction to graphs, Graph terminology, Application of Graphs, Finite and Infinite graphs, Incidence and Degree, Isolated vertex, Pendent Vertex, and Null graph.

Trees and their properties, Rooted and Binary trees, Tree traversal (Pre order, Post order, in order).

(Lectures 8)

### Text Books

1. Rawool Vinay, Raul Bhakti, *Discrete Mathematics*, Tech Max Publication.
2. Kumar Swapan Sarkar, *Discrete Mathematics*, S Chand.
3. Deo Narsingh, *Graph Theory with Applications to Engineering and Comp. Sci.*, PHI.

### Reference Books

1. Seymour Lipschutz and Marc Lipson Schaum Outline series, *Discrete Mathematics*, TMH.
2. Liu C.L. *Elements of Discrete Mathematics*.
3. Dean Neville, *Essence of Discrete Mathematics*, Prentice Hall.
4. Kenneth H. Rosen *Discrete Mathematics and Its Applications*, McGraw Hill.
5. Johnsonbaugh Richard, *Discrete Mathematics*, Macmillan.

## B. Tech. Semester III

### OOPS AND C++ PROGRAMMING

Course Code : ECS302

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** Object-oriented programming (OOP) is a programming paradigm that uses "objects" and their interactions to design applications and computer programs. Programming techniques may include features such as information hiding, data abstraction, encapsulation, modularity, polymorphism, and inheritance. It was not commonly used in mainstream.

#### Course Contents

##### Unit I

Different paradigms for problem solving, need for OOP, differences between OOP and Procedure oriented programming, Overview of OOP principles, Abstraction, Encapsulation, Inheritance and Polymorphism.

**Object & Classes:** Links and Associations, Generalization and Inheritance, Aggregation, Abstract classes, Generalization, Multiple Inheritance, Meta data.

**State Model:** Events and States, Operations and Methods, Nested state diagrams, Concurrency, Relation of Object and Dynamic Models.

**Functional Models:** Data flow diagrams, Specifying Operations, Constraints, OMT Methodologies, examples and case studies to demonstrate methodology. (Lectures 8)

##### Unit II

C++ Basics: Structure of a C++ program, Data types, Declaration of variables, Expressions, Operators, Operator Precedence, Evaluation of expressions, Type conversions, Pointers, Arrays, Pointers and Arrays, Strings, Structures, Flow control statement- if, switch, while, for, do, break, continue, go to statements. Functions-Scope of variables, Parameter passing, Default arguments, inline functions, Recursive functions, Pointers to functions.

Dynamic memory: allocation and de-allocation operators-new and delete, Preprocessor directives.

(Lectures 8)

##### Unit III

**C++ Classes And Data Abstraction:** Class definition, Class structure, Class objects, Class scope, this pointer, Friends to a class, Static class members, Constant member functions, Constructors and Destructors, Dynamic creation and destruction of objects, Data abstraction.

**Polymorphism:** Function overloading, Operator overloading, generic programming-necessity of templates, Function templates and class templates.

**Inheritance:** Defining a class hierarchy, Different forms of inheritance, Defining the Base and Derived classes, Access to the base class members, Base and Derived class construction, Destructors, Virtual base class. (Lectures 8)

##### Unit IV

Virtual Functions And Polymorphism: Static and Dynamic bindings, Base and Derived class virtual functions, Dynamic binding through virtual functions, Virtual function call mechanism, Pure virtual functions, Abstract classes, Implications of polymorphic use of classes, Virtual destructors.

(Lectures 8)

##### Unit V

C++ I/O: I/O using C functions, Stream classes hierarchy, Stream I/O, File streams and String streams, Overloading << & >> operators, Error handling during file operations, Formatted I/O.

(Lectures 05)

#### Text Books

1. Rambaugh James et al, *Object Oriented Design and Modeling*, PHI
2. Lafore R., *Object Oriented Programming in C++*, Galigotia Publications Pvt. Ltd.
3. Balagurusamy E, *Object Oriented Programming with C++*, TMH

#### Reference Books

1. Lippman S.B. and Lajoie J., *C++ Primer*, Pearson Education.
2. Stroutstrup B., *The C++ Programming Language*, Pearson Education.
3. Gaddis T. Walters J. and Muganda G., *OOP in C++*, Wiley DreamTech Press.
4. Lafore.R, *Object Oriented Programming in C++*, Galigotia Publications Pvt. Ltd.



## B. Tech Semester III

### DIGITAL ELECTRONICS AND COMPUTER ORGANIZATION

Course Code: EEC302

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** To manage the computer hardware and to study the overall Architecture & organization of the computer system.

#### Course Contents

##### Unit I

Data representation Data Types and Number Systems, Binary Number System, Octal & Hexa-Decimal Number System, Fixed Point Representation, 1's & 2's Complement, Binary Fixed- Point Representation, Arithmetic Operation on Binary Numbers, Overflow & Underflow, Floating Point Representation, Codes, ASCII, EBCDIC Codes, Gray Code, Excess-3 & BCD, Error Detection & Correcting Codes Binary Storage and Registers. **(Lectures 08)**

##### Unit II

Boolean algebra and digital logic circuits -Logic Gates, AND, OR, NOT Gates and their Truth Tables, NOR, NAND & XOR Gates, Boolean Algebra, Basic Definition and Properties, Basic Boolean Law's, Demorgan's Theorem Map Simplification, Minimization Techniques, K Map – Two, Three and More variables maps, Sum of Product & Product of Sums, Don" t care conditions, Combination & Sequential Circuits, Half adder & Full adder, Full subtractor, Full subtractor and decimal adder, Code Conversion, Multilevel NAND and NOR Circuits, Multiplexers and Demultiplexers, RAM and ROM Working & Circuit. **(Lectures 08)**

##### Unit III

Sequential logic- Flip-Flops - RS, D, JK & T Flip-Flop, Triggering in flip flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, flip flop excitation tables, Design procedure and design of counters. Design with equations, Registers, Counters and the memory unit, Shift registers, Ripple counters and Synchronous counters, Timings sequence digital logic families. **(Lectures 08)**

##### Unit IV

Registers transfer logic, Intel Register Transfer, Arithmetic Logic and Shift Micro Operation, Conditional, Constant Statement, Fixed Point Binary Data Floating Point Data, Instruction Codes. Input-output organizations- I/O Interface, Properties of simple I/O Devices and their controller, Isolated Vs Memory-mapped I/O, Modes of data transfer, Synchronous & Asynchronous data transfer **(Lectures 08)**

##### Unit V

Memory organization - Auxiliary Memory, Magnetic Drum, Disk & Tape, Semi-conductor memories, memory, Hierarchy, Associative memory, Virtual memory, Address space & memory space, Address mapping, page table, Page replacement, segmentation, Cache memory, Hit ratio, Mapping techniques, Writing into cache . **(Lectures 08)**

#### Text Books

1. Mano M., *Computer System Architecture*, (PHI)
2. Mano M., *Digital Logic*, PHI Publication
3. Stallings, *Computer Organization*, (PHI)

#### Reference Books

1. Zaky & Hamacher, *Computer Organization*, TMH Publication
2. Tannenbaum *Structured Computer Organization*, PHI
3. John P.Hayes, *Computer Organization*, McGraw Hill



## B. Tech Semester III OPERATING SYSTEM

**Course Code: ECS303**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** To provide an understanding of the functions and modules of an operating system and study the concepts underlying its design and implementation.

### Course Contents

#### Unit I

Introduction to the Operating System, Types of OS: Batch System, Time Sharing System, Real Time System. Multi Programming, Distributed System, Functions of Operating System, Operating System Services, System calls, system programs, Virtual machines **(Lectures 08)**

#### Unit II

Process Management: Process Concept, Process State, Process Control Block, Process Scheduling. CPU Scheduling - CPU Scheduling, Scheduling Criteria, Scheduling Algorithms, Preemptive & Non Preemptive Scheduling. **(Lectures 09)**

#### Unit III

Process Synchronisation: Critical Section Problem, Race Condition, Synchronisation Hardware, Semaphores, Classical Problems of Synchronisation.

Dead Locks: Characterisation, Methods for Handling Deadlocks Avoidance, Deadlock Detection & Recovery from Deadlock. **(Lectures 08)**

#### Unit IV

Memory Management: Contiguous Allocation, External and Internal Fragmentation, Paging & Segmentation.

Virtual Memory: Concept of Virtual Memory, Concept of Demand Paging, Page Replacement Algorithms, Allocation of Frames, Thrashing. **(Lectures 08)**

#### Unit V

Directory Structure, Allocation Methods; Contiguous Allocation, Linked Allocation, Indexed Allocation Free Space Management.

Disk Structure, Disk Scheduling Algorithms, Disk Management. **(Lectures 08)**

### Text Books

1. Silberschatz and Galvin, *Operating System Concept*, Addison Weseley.
2. Nutt G. *Operating Systems*, Addison-Wesley.
3. Godbole Ahyut, *Operating System*, PHI.

### References Books

1. Flynn, Mchoes, *Understanding Operating System*, Thomson Press,
2. Tannenbaum, *Operating System Concept*, Addison Weseley.
3. Joshi R. C. and Tapaswi, S., *Operating Systems*, Wiley Dreamtech.

## B. Tech Semester III ORGANIZATIONAL BEHAVIOUR

Course Code: EHM302

L	T	P	C
3	2	0	4

**Objective:** The objective of studying this course is to make the students aware about how to study the behavior of the employees who are working in organization and to motivate them so that the organization can get the work done through people.

### Course Contents

#### Unit I

Concept, Nature, Characteristics, Models of Organizational Behaviors, Management Challenge, Organizational Goal. Global challenges and Impact of culture.

(Lectures 08)

#### Unit II

**Perception:** Concept, Nature, Process, Importance. Attitudes and Workforce Diversity.

**Personality:** Concept, Nature, Types and Theories of Personality Shaping, Learning: Concept and Theories of Learning.

(Lectures 8)

#### Unit III

**Motivation:** Concepts and Their Application, Principles, Theories, Motivating a Diverse Workforce.

**Leadership:** Concept, Function, Style and Theories of Leadership-Trait, Behavioral and Situational Theories.

Analysis of Interpersonal Relationship, Group Dynamics: Definition, Stages of Group Development, Formal and Informal Groups, Group Decision Making,

(Lectures 8)

#### Unit IV

**Organizational Power and Politics:** Concept, Sources of Power, Approaches to Power, Political Implications of Power.

Knowledge Management & Emotional Intelligence in Contemporary Business Organization

**Organizational Change:** Concept, Nature, Resistance to change, Managing resistance to change, Implementing Change.

(Lectures 08)

#### Unit V

**Conflict:** Concept, Sources, Types, Functionality and Dysfunctionality of Conflict, Classification of Conflict Intra, Individual, Interpersonal, Intergroup and Organisational, Resolution of Conflict, Stress: Understanding Stress and Its Consequences, Causes of Stress, Managing Stress.

**Organisational Culture:** Concept, Characteristics, Elements of Culture, Implications of Organisation culture.

(Lectures 08)

### Text Books

1. Newstrom John W., *Organizational Behaviour: Human Behaviour at Work*, Tata Mc Graw Hill
2. Luthans Fred, *Organizational Behaviour*, Tata Mc Graw Hill
3. Mc Shane L. Steven, Glinow Mary Ann Von & Sharma Radha R., *Organizational Behaviour*, Tata Mc Graw Hill

### Reference Books

1. Robbins Stephen P., *Organizational Behavior*, (Pearson Education)
2. Paul Hersey, Blanchard, Kenneth H and Johnson Dewey E. *Management of Organisational Behavior: Leading Human Resources*, , Pearson Education
3. Khanka S. S. *Organizational Behavior*,

## B. Tech. Semester III ENGLISH COMMUNICATION-III

Course Code : EHM301

L	T	P	C
3	0	0	3

**Objective:** The objective behind the course is to improve the Vocabulary skills, conversational skills and business correspondence of students.

### Course Contents

#### Unit I

Vocabulary: Spelling Rules, Vocabulary building, Word Formation, Prefix, Suffix, Compound words.

(Lectures 06)

#### Unit II

Synonyms, Antonyms, Idioms, Phrases, Proverbs, Use of Adverb „too“ , Homophones, Homonyms, Paroxysm. One word substitution, Words often confused.

(Lectures 06)

#### Unit III

**Dictionary Elements:** How to look up a dictionary.

Figure of speech: Simile, Metaphor, Personification, Apostrophe, Hyperbole, Onomatopoeia, Oxymoron.

(Lectures 06)

#### Unit IV

Writing skills, Writing Single- sentence Definition. Factual description of Objects, Process, Experiments  
Expansion of (an idea into a) passage, Dialogue Writing.

(Lectures 06)

#### Unit V

Value based Reading

Short Stories: “The Rocking Horse Winner”, D.H.Lawrence

“The Capital of the World”, Ernest Hemingway

Essay: “Science and Human Life”, J.B.S.Haldane

(Lectures 06)

### Texts Books

1. Singh R.P, *An Anthology of English Essay*, Oxford University Press, New Delhi.
2. Singh R P, *An Anthology short stories*, Singh R P, OUP, New Delhi.
3. Rutherford A., *Basic Communication Skills*, Person Education, New Delhi.

### Reference Books

1. Arora V.N. et al, *Improve Your Writing*, OUP, Delhi
2. Mohan K. & Sharma R.C, *Business Correspondence of Report Writing*, TMH, New Delhi

### \*Note:

### Internal Marking

There shall be a continuous evaluation and the marking would be as follows.

### Marks 50

**Part A – 25 marks** Would be based on the pattern of internal evaluation of all theory papers viz two internal examinations of 7.5 marks each, regular assessment through tutorials and class assignments – 5 marks and attendance -5 marks.

**Part B – 25 marks** Students are required to read the daily word and sentence written on the White Board at the entrance of the college along with its meaning.

**10 marks** –Random class test would be held in the Classes which will be based on the words and sentences written on the white board only.

**15 marks**- Would be based on a project report that the student would write and would present the same to the committee comprising of three members to be appointed by the Director of the college.

The committee will assess the performance of the student on the basis of project done and presentation made before committee.

**B. Tech Semester III**  
**OOPS AND C++ PROGRAMMING (LAB)**

**Course Code: ECS351**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

Write programs in C/C++ for

1. Program illustrating overloading of various operators.
2. Program illustrating use of Friend, Inline, Static Member functions, default arguments.
3. Program illustrating use of destructor and various types of constructor.
4. Program illustrating various forms of Inheritance.
5. Program illustrating use of virtual functions, virtual Base Class.
6. Program illustrating how exception handling is done.
7. Program implementing various kinds of sorting algorithms, Search algorithms & Graph algorithms.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5 MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

**B. Tech Semester III**  
**DIGITAL LOGIC CIRCUIT (LAB)**

**Course Code: EEC351**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Activity:** To implement the working of all basic Gates using Specific IC<sup>s</sup>.

To minimize Boolean expression using Universal Gates.

Implementation of Half Adder, Full Adder, Subtractor, Decoder, Encoders, Multiplexer, Demultiplexer, Combinational logic Design, Flip-Flops, Basic Registers & Counters

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5 MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

## B. Tech Semester III UNIX (LAB)

**Course Code: ECS352**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **Course Contents**

Write Shell Script for UNIX environment.

Understanding of basic commands of UNIX administration, user authorization, grant of users right and privileges, backup and recovery.

Source Code Control System understanding Lex and Yacc, debugger tools (Lint, make etc.)

Write program in C for Process Creation, Parent/Child process relationship, forking of process. Inter Process Communication and socket programming implementation of exec system call, pipe, semaphore and message queue.

### **Evaluation of Practical Examination:**

#### **Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

#### **Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5 MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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#### **External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

**B. Tech. – Semester III**  
**DISCIPLINE & GENERAL PROFICIENCY**

**Course Code: ECS371**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Guidelines**

There shall be continuous evaluation of the student on the following broad parameters:

1. Observance of dress code
2. Participation in Conferences /Workshops / Seminars
3. Attendance in guest lectures, invited talks and special technical sessions organized from time to time..
4. Participation in community projects including NCC and NSS.
5. Exhibiting team spirit in different activities of the University and College organized from time to time.
6. Observance of rule & regulations in the College/University.
7. Behaviour in hostel mess and hostel.
8. Performance and awards received in different events (sports/ co-curricular activities) organized at College / University and other level.
9. General behaviour

The above is an indicative list of parameters on which the students shall be continuously evaluated. The college may evaluate the student on the specific parameters by informing them through a notice displayed on the notice board before evaluation.

There shall be no external examination for this course; however the marks shall be included for calculation of cumulative Performance Index (CPI)

## B. Tech Semester IV

### THEORY OF COMPUTATION

Course Code: ECS401

L	T	P	C
3	2	0	4

**Objective:** To give the brief knowledge of computer Automation and Computation

#### Course Contents

##### Unit I

Introduction; alphabets, Strings and Languages; automata and Grammars Finite automata (FA) -its behavior; DFA -Formal definition, simplified notations (state transition diagram, transition table), Language of a DFA. NFA -Formal definition, Language of an NFA, Removing, epsilon transitions. Equivalence of DFAs and NFAs Regular expressions (RE) -Definition, FA and RE, RE to FA, FA to RE, algebraic laws for RE, applications of REs. (Lectures 08)

##### Unit II

Proving languages to be non-regular –using Pumping Lemma. Some closure properties of Regular languages -Closure under Boolean operations, reversal, homomorphism, inverse homomorphism, etc. DFA Minimization Some decision properties of Regular languages -emptiness, finiteness, membership, equivalence of two DF As or REs, etc. Two-way finite automata, Finite automata with output (Lectures 08)

##### Unit III

Context-free Grammars (CFGs) -Formal definition, sentential forms, leftmost and rightmost derivations,, the language of a CFG. Derivation tree or Parse tree -Definition, Relationship between parse trees and derivations. Parsing and ambiguity, Ambiguity in grammars and Languages Pushdown Automata (PDA) -Formal definition, behavior and graphical notation, The language of PDA (acceptance by final state and empty stack). Equivalence of PDAs and CFGs, CFG to PDA, PDA to CFG, DPDAs -Definition, DPDAs and Regular Languages, DPDAs and CFLs. (Lectures 08)

##### Unit IV

Languages of DPDAs, DPDAs, and ambiguous grammars. Simplification of CFGs. Normal forms - CNF and GNF Proving that some languages are not context free -Pumping lemma for CFLs Some closure properties of CFLs -Closure under union, concatenation, Kleene closure, substitution, homomorphism, reversal, intersection with regular set, etc. (Lectures 08)

##### Unit V

Turing Machines TM -Formal definition and behavior, Transition diagrams, Language of a TM,.Variants of TMs -Multitape TMs, Nondeterministic TMs. , Undecidability of the universal language, Post's Correspondence Problem (PCP) -Definition, Undecidability of PCP. Chomsky hierarchy. (Lectures 08)

#### Text Books

1. Ullman Hopcroft, *Introduction to Automata Theory, Language and Computation*, Nerosa Publishing House
2. Mishra K.L.P. and Chandrasekaran N. *Theory of Computer Science (Automat Language and Computation)*, PHI
3. Martin J.C. *Introduction to Language and Theory of Computation*, TMH

#### Reference Books

1. Papadimitriou, C. & Lewis, *Elements of Theory of Computation*, C.L.PHI
2. DIA Cohen, *Introduction to Computer Theory*, John Wiley& Sons
3. Kumar Rajendra, *Theory of Automata (Language and Computation)*, PPM



## B. Tech Semester IV DATABASE MANAGEMENT SYSTEM

Course Code: ECS402

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The objective of the subject is to aware the students with the concepts of Data base management system. This subject includes Data Modeling using the Entity Relationship Model, SQL, Normalization, Transaction Processing Concepts, and Concurrency Control Techniques.

### Course Contents

#### Unit I

**Introduction:** An overview of database management system, database system Vs file system, Database system concepts and architecture, data models schema and instances, data independence and data base language and interfaces, Data definitions language, DML, Overall Database Structure. ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationships of higher degree.

(Lectures 8)

#### Unit II

**Relational data Model and Language:** Relational data model concepts, integrity constraints: entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra, relational calculus, tuple and domain calculus.

**Introduction to SQL:** Characteristics of SQL. Advantage of SQL. SQL data types and literals. Types of SQL commands. SQL operators and their procedure. Tables, views and indexes. Queries and sub queries. Aggregate functions. Insert, update and delete operations. Joins, Unions, Intersection, Minus, Cursors in SQL.

(Lectures 8)

#### Unit III

**Data Base Design & Normalization:** Functional dependencies, normal forms, first, second, third normal forms, BCNF, loss less join, decompositions, normalization using FD, MVD, and JDs, alternative approaches to database design.

(Lectures 8)

#### Unit IV

**Transaction Processing Concepts:** Transaction system, Testing of serializability, Serializability of schedules, conflict & view serializable schedule, recoverability, Recovery from transaction failures, log based recovery, checkpoints, deadlock handling.

(Lectures 8)

#### Unit V

**Concurrency Control Techniques:** Concurrency control, locking Techniques for concurrency control, Time stamping protocols for concurrency control, validation based protocol, multiple granularity, Multi version schemes, Recovery with concurrent transaction.

(Lectures 8)

### Text Books

1. Date C J, *An Introduction to Database System*, Addison Wesley
2. Korth, Silbertz, Sudarshan, *Database Concepts*, McGraw Hill
3. Elmasri, Navathe, *Fundamentals Of Database Systems*, Addison Wesley

### Reference Books

1. Bipin C. Desai, *An introduction to Database Systems*, Galgotia Publication
2. Majumdar & Bhattacharya, *Database Management System*, TMH
3. Ramakrishnan, Gehrke, *Database Management System*, McGraw Hill
4. Leon & Leon, *Database Management System*, Vikas Publishing House.

## B. Tech Semester IV

### DATA STRUCTURE USING C ++ PROGRAMMING

Course Code : ECS403

L	T	P	C	
3	2	0	4	

**Objective:** The objective of the paper is to give the practical knowledge and the concept of how the data is exactly stored in memory. It also gives knowledge to perform different operations on them using concept of C programming. This is the core technical paper of Computer science.

#### Course Contents

##### Unit I

**Introduction:** Basic Terminology, Elementary Data Organization, Data Structure operations, Algorithm Complexity and Time-Space trade-off

**Arrays:** Array Definition, Representation and Analysis, Single and Multidimensional Arrays, address calculation, application of arrays, Character String in C, Character string operation, Ordered List, Sparse Matrices. **Stacks:** Array Representation and Implementation of stack, Operations on Stacks: Push & Pop, Array Representation of Stack, Linked Representation of Stack, Operations Associated with Stacks, Application of stack: Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stack. Recursion. (Lectures 8)

##### Unit II

**Queues:** Array and linked representation and implementation of queues, Operations on Queue: Create, Add, Delete, Full and Empty. Circular queue, Deque, and Priority Queue.

**Linked List:** Representation and Implementation of Singly Linked Lists, Two-way Header List, Traversing and Searching of Linked List, Overflow and Underflow, Insertion and deletion to/from Linked Lists, Insertion and deletion Algorithms, Doubly linked list, Garbage Collection and Compaction. (Lectures 8)

##### Unit III

**Trees:** Basic terminology, Binary Trees, Binary tree representation, algebraic Expressions, Complete Binary Tree. Extended Binary Trees, Array and Linked Representation of Binary trees, Traversing Binary trees, Threaded Binary trees. Traversing Threaded Binary trees, Huffman algorithm. Searching and Hashing: Sequential search, binary search, comparison and analysis, Hash Table, Hash Functions. (Lectures 8)

##### Unit IV

**Sorting:** Insertion Sort, Bubble Sorting, Quick Sort, Two Way Merge Sort, Heap Sort, Sorting on Different Keys, Practical consideration for Internal Sorting. **Binary Search Trees:** Binary Search Tree (BST), Insertion and Deletion in BST, Complexity of Search Algorithm, Path Length, AVL Trees, B-trees. (Lectures 8)

##### Unit V

**Graphs:** Terminology & Representations, Graphs & Multi-graphs, Directed Graphs, Representations of Graphs, Adjacency Matrices, Traversal, Connected Component and Spanning Trees, Minimum Cost Spanning Trees. **File Structures:** Physical Storage Media File Organization, Organization of records into Blocks, Sequential Files, Indexing and Hashing, Primary indices, Secondary indices, B+ Tree index Files, B Tree index Files, Indexing and Hashing Comparisons. (Lectures 8)

#### Text Books

1. Lipschutz, *Data Structure*, TMH
1. Tenenbaum A.M., *Data Structures using C & C++*, PHI
2. Yashwant Kanitkar, *Data Structure using C++*,

#### Reference Books

1. Horowitz and Sahani, *Fundamentals of Data Structures*, Galgotia
2. Kruse et al R., *Data Structures and Program Design in C*, Pearson Education
3. Cormen T. H., *Introduction to Algorithms*, PHI
4. Loudon K., *Mastering Algorithms With C*, Shroff Publisher & Distributors
5. Bruno R Preiss, *Data Structures and Algorithms with Object Oriented Design Pattern in C++*, Jhon Wiley & Sons, Inc.
6. Adam Drozdek, *Data Structures and Algorithms in C++*, Thomson Asia
7. Pal G. Sorenson, *An Introduction to Data Structures with Application*, TMH.

## B. Tech. Semester IV SOFTWARE ENGINEERING

Course Code: ECS404

L	T	P	C
3	2	0	4

**Objective:** The aim of this subject is to provide essential knowledge about engineering aspects in software development. Without the knowledge of software engineering concepts, programmers don't turn out to deliver good software product. This subject caters this need well.

### Course Contents

#### Unit I

**Introduction:** Introduction to software engineering, Importance of software, The evolving role of software, Software Characteristics, Software Components, Software Applications, Software Crisis, Software Development Life Cycle, Software Process. (Lectures 08)

#### Unit II

**Software Requirement Specification:** Analysis Principles, Water Fall Model, The Incremental Model, Prototyping, Spiral Model, Role of management in software development, Role of matrices and Measurement, Problem Analysis, Requirement specification, Monitoring and Control.

**Software-Design:** Design principles, problem partitioning, abstraction, and top down and bottom up-design, Structured approach, functional versus object oriented approach, design specifications and verification, Cohesion, Coupling. (Lectures 8)

#### Unit III

**Coding:** Top-Down and Bottom –Up programming, structured programming, information hiding, programming style and internal documentation.

**Testing:** Testing principles, Levels of testing, functional testing, structural testing, test plane, test case specification, software testing strategies, Verification & validation, Unit testing, Integration Testing, Alpha & Beta testing, system testing and debugging (Lectures 8)

#### Unit IV

**Software Project Management:** The Management spectrum- (The people, the product, the process, the project), cost estimation, project scheduling, staffing, software configuration management, Maintenance, quality assurance, (Lectures 8)

#### Unit V

**Software Reliability & Quality Assurance:** Reliability issues, Reliability metrics, Reliability growth modeling, Software quality, ISO 9000 certification for software industry, SEI capability maturity model, comparison between ISO & SEI CMM.

**CASE (Computer Aided Software Engineering):** CASE and its Scope, CASE support in software life cycle, documentation, Architecture of CASE environment. (Lectures 8)

### Text Books

1. Agarwal K.K., *Software Engineering*, New Age International
2. Pressman, Roger S., *Software Engineering: A Practitioner's Approach*, McGraw Hill
3. Jalote, Pankaj, *Software Engineering*, Narosa
4. Schaum's Series, *Software Engineering*, TMH

### Reference Books

1. Alexis, Leon and Mathews Leon, *Fundamental of Software Engineering*, Vikas Publishers
2. Sommerville vSoftware Engineering, Ian, AWL, 2000
3. Bell "Software Engineering for students", Pearson Education

## B. Tech Semester IV

### COMPUTER BASED NUMERICAL AND STATISTICAL TECHNIQUES

**Course Code: ECS405**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** Solution of systems of linear equations, Solution of systems of nonlinear equations, Interpolation: Finite difference, Curve fitting, Cubic Spline and Approximation, Frequency Chart, Regression analysis, Time series and forecasting, Testing of Hypothesis.

#### Course Contents

##### Unit I

Solution of systems of linear equations – Direct method, Gauss Jordan and Gauss Elimination methods, Pivoting, Iterative methods – Jacobi and Gauss Seidel methods. **(Lectures 07)**

##### Unit II

Solution of systems of nonlinear equations – Bisection method, Regula -Falsi method, Newton - Raphson method, Rate of convergence, Numerical integration and differentiation: Trapezoidal and Simpson" s rule, Derivatives from Newton" s Forward polynomial. **(Lectures 09)**

##### Unit III

**Interpolation:** Finite difference, Newton" s forward and backward interpolation formulae, Central Difference formulae – Gauss forward and backward difference formulae, Newton" s divided difference Formula, Lagrange" s interpolation formula. **(Lectures 8)**

##### Unit IV

Curve fitting, Cubic Spline and Approximation: Method of least squares, fitting of straight lines, polynomials, exponential curves etc.

**Frequency Chart:** Different frequency chart like Histogram, Frequency curve, Pi-chart.

**Regression analysis:** Linear and Non-linear regression, Multiple regression.

**(Lectures 8)**

##### Unit V

Time series and forecasting: Moving averages, smoothening of curves, forecasting models and methods. Statistical Quality Controls methods.

Testing of Hypothesis: Test of significance, Chi-square test, t-test, ANOVA, F-Test, Application to medicine, agriculture etc.

**(Lectures 8)**

#### Text Books

1. Raja Raman V., *Computer oriented Numerical Methods*, Prentice Hall.
2. Grewal B. S., *Numerical methods in Engineering and Science*, Khanna Publishers, Delhi.
3. Gupta S. P., *Statistical Methods*, Sultan and Sons.

#### Reference Books

1. Gerald & Wheatley AW., *Applied Numerical Analyses*,
2. Jain, *Numerical Methods for Scientific and Engineering Computations*, Iyengar and Jain New Age Int.
3. Veerarajan T & Ramachandran T., *Theory and Problems in Numerical Methods*, TMH.
4. Niyogi Pradip, *Numerical Analysis and Algorithms*, TMH.
5. Scheld Francis, *Numerical Analysis*, TMH.
6. Balaguruswamy, *Numerical Methods*, TMH.

**B. Tech. Semester IV**  
**ENGLISH COMMUNICATION-IV**

**Course Code: EHM401**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

**Course Contents**

**Unit I**

Communication: Meaning and importance of communication, Essentials of an effective communication, Barriers to effective communication, Channels of communication.

**(Lectures 06)**

**Unit II**

Types of Communication: Written and Verbal communication, Formal and Informal communication (the Grapevine), Upward and Downward communication; Formal and Informal network models.

**(Lectures 06)**

**Unit III**

Advantages and Disadvantages Communication (conversational)-Telephonic conversation, Guidelines for telephonic conversation, How to receive a call, telephone message, How to make a call, emergency calls.

**(Lectures 06)**

**Unit IV**

Writing Skills Summarizing. Reporting events, writing newspaper reports Essential of essay writing-writing an essay of about 300 words on a given topic.

**(Lectures 06)**

**Unit V**

Value Based Reading

Short Stories: "The Fly", Katherine Mansfield

"The Eyes Are Not Here", Ruskin Bond

Essay: "The Gandhian Outlook", Dr.S.Radhakrishnan

**(Lectures06)**

**Texts Books**

1. Singh R.P, *An Anthology of English Essays*, Oxford University Press, New Delhi.
2. Singh R P, *An Anthology short stories*, Singh R P, OUP, New Delhi.
3. Ruther Ford A., *Basic Communication Skills*, Person Education, New Delhi.

**Reference Books**

1. Arora V.N. et al, *Improve Your Writing*, OUP, Delhi.
2. Mohan K. & Sharma R.C, *Business Correspondence of Report Writing*, TMH, New Delhi.

**\*Note:**

**Internal Marking**

There shall be a continuous evaluation and the marking would be as follows.

**Marks 50**

**Part A – 25 marks** Would be based on the pattern of internal evaluation of all theory papers viz two internal examinations of 7.5 marks each, regular assessment through tutorials and class assignments – 5 marks and attendance -5 marks.

**Part B – 25 marks** Students are required to read the daily word and sentence written on the White Board at the entrance of the college along with its meaning.

**10 marks** –Random class test would be held in the Classes which will be based on the words and sentences written on the white board only.

**15 marks-** Would be based on a project report that the student would write and would present the same to the committee comprising of three members to be appointed by the Director of the college.

The committee will assess the performance of the student on the basis of project done and presentation made before committee.

**B. Tech Semester IV**  
**DATA BASE MANAGEMENT SYSTEM (LAB)**

**Course Code: ECS451**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

The programme to be implemented using SQL

1. Create Table, SQL for Insertion, Deletion, Update and Retrieval using aggregating functions.
2. Write Programs in PL/SQL, Understanding the concept of Cursors.
3. Write Program for Join, Union & intersection etc.
4. Creating Views, Writing Assertions, Triggers.
5. Creating Forms, Reports etc.
6. Writing codes for generating read and update operator in a transaction using different situations.
7. Implement of 2PL concerning central algorithm.
8. Developing code for understanding of distributed transaction processing.
9. Students are advised to use Developer 2000 Oracle 8+ version for above experiments.
10. However, depending on the availability of Software<sup>s</sup> students may use power builder/SQL Server/DB2 etc. for implementation.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination

**B. Tech Semester IV**  
**DATA STRUCTURES USING C++ (LAB)**

**Course Code: ECS452**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

Write Program in C++ for following:

1. Sorting programs: Bubble sort, Merge sort, Insertion sort, Selection sort, and Quick sort.
2. Searching programs: Linear Search, Binary Search.
3. Array implementation of Stack, Queue, Circular Queue, Linked List.
4. Implementation of Stack, Queue, Circular Queue, Linked List using dynamic memory allocation.
5. Implementation of Binary tree.
6. Program for Tree Traversals (preorder, inorder, postorder).
7. Program for graph traversal (BFS, DFS).
8. Program for minimum cost spanning tree, shortest path.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination



**B. Tech Semester IV**  
**COMPUTER BASED NUMERICAL AND STATISTICAL TECHNIQUES (LAB)**

**Course Code: ECS 453**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

Write programs in C

1. To implement floating point arithmetic operations i.e., addition, subtraction, multiplication and division.
2. To deduce errors involved in polynomial interpolation.
3. Algebraic and transcendental equations using Bisection, Newton Raphson,
4. Iterative, method of false position, rate of conversions of roots in tabular form for each of these methods.
5. To implement formulae by Bessels, Newton, Stirling, Langranges etc.
6. To implement method of least square curve fitting.
7. Implement numerical differentiation.
8. Implement numerical integration using Simpson's 1/3 and 3/8 rules, trapezoidal rule.
9. To show frequency chart, regression analysis, Linear square fit, and polynomial fit.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination



**B. Tech. – Semester IV**  
**DISCIPLINE & GENERAL PROFICIENCY**

**Course Code: ECS471**

	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Guidelines**

There shall be continuous evaluation of the student on the following broad parameters:

1. Observance of dress code
2. Participation in Conferences /Workshops / Seminars
3. Attendance in guest lectures, invited talks and special technical sessions organized from time to time..
4. Participation in community projects including NCC and NSS.
5. Exhibiting team spirit in different activities of the University and College organized from time to time.
6. Observance of rule & regulations in the College/University.
7. Behaviour in hostel mess and hostel.
8. Performance and awards received in different events (sports/ co-curricular activities) organized at College / University and other level.
9. General behaviour

The above is an indicative list of parameters on which the students shall be continuously evaluated. The college may evaluate the student on the specific parameters by informing them through a notice displayed on the notice board before evaluation.

There shall be no external examination for this course; however the marks shall be included for calculation of cumulative Performance Index (CPI)

## B. Tech. Semester V COMPUTER ARCHITECTURE

Course Code: ECS502

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** This paper makes the students aware with the topics of computer architecture like parallel computing, processor designing principles and multiprocessor scheduling strategies etc.

### Course Contents

#### Unit I

Introduction to Parallel computing; Parallelism in Uni-processor Systems, Parallel computer structures, Architectural Classification schemes, parallel processing applications. Pipelining Processing: An overlapped parallelism, Instruction and Arithmetic pipelines,

(Lectures 10)

#### Unit II

Principles of designing pipelined processors, Internal forwarding and register tagging, Hazard detection and resolution, Job sequencing and collision prevention, Characteristics of Vector processing, Multiple vector task dispatching, SIMD array processors, Masking and Data routing

(Lectures 06)

#### Unit III

SIMD Interconnection network: Static, Dynamic networks, Cube interconnection network, Shuffle exchange and Omega Network, SIMD matrix multiplication.

Multiprocessor Architecture: Tightly and loosely coupled multiprocessors.

(Lectures 06)

#### Unit IV

Multiprocessor scheduling strategies and deterministic scheduling models, Introduction to Data Flow computing and data flow Graph. Introduction to 8 Bit and 16 Bit Intel Microprocessor Architecture and Register set.

(Lectures 08)

#### Unit V

Assembly language programming based on Intel 8085; Instructions: Data Transfer, Arithmetic, Logic, Branch operations, Looping Counting, Indexing, Programming Techniques, Counters and Time Delays, Stacks and Subroutines, Conditional call and Return Instructions, Advanced Subroutine Instructions.

(Lectures 10)

### Text Books

1. Hwang and Briggs, *Computer Architecture and Parallel Processing*, McGraw Hill
2. Peterson & Heresy, *Quantitative Approach to Computer Architecture*, Morgan Kaufman
3. Hwang, *Advanced Computing Architecture*, McGraw Hill

### References Books

1. Quin, *Parallel Computing, Theory and Practices*", McGraw Hill
2. Tabak Daniel, *Advanced Microprocessor*, McGraw Hill
3. Hall D.V., *Microprocessor and Interfacing, Program and Hardware*, TMH
4. Goankar R.S., *Microprocessor Architecture, Programming and Application with the 8085*, Pen Ram International.

## B. Tech. Semester V ANALYSIS AND DESIGN OF ALGORITHM

**Course Code: ECS503**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The Objective of this Paper is to give the Technical Knowledge of the students. This is one of the technical papers of Computer Application which give the core knowledge of Data Structure used in it. Gives the knowledge of all data structures which is used in all other higher applications of Computer Application.

### Course Contents

#### Unit I

**Introduction:** Algorithm Design paradigms- motivation, concept of algorithmic efficiency, run time analysis of algorithms, Asymptotic Notations. Divide and conquer: Structure of divide-and-conquer algorithms: examples; Binary search, quick sort, Analysis of divide and conquer.

(Lectures 08)

#### Unit II

**Greedy Method:** Overview of the greedy paradigm examples of exact optimization solution (minimum cost spanning tree), approximate solution (Knapsack problem), Single source shortest paths.

(Lectures 09)

#### Unit III

**Dynamic Programming:** Overview, difference between dynamic programming and divide and conquer, Applications: Shortest path in graph, Matrix multiplication, Traveling salesman Problem, longest Common sequence.

(Lectures 10)

#### Unit IV

**Graph searching and Traversal:** Overview, Traversal methods (depth first and breadth first search). Back tracking: Overview, 8-queen problem, and Knapsack problem.

(Lectures 10)

#### Unit V

**Brach and Bound:** LC searching Bounding, FIFO branch and bound, LC branch and bound application: 0/1 Knapsack problem, Traveling Salesman Problem. Computational Complexity: Complexity measures, Polynomial Vs non-polynomial time complexity; NP-hard and NP-complete classes, examples.

(Lectures 09)

### Text Books

1. Cormen Leiserson et al, *Introduction to Algorithms*, PHI
2. Sahani Horowitz, *Fundamentals of Computer Algorithms*, Golgotia

### Reference Books

1. Bratley Brassard, *Fundamental of Algorithms*, PHI
2. Goodrich M.T ., *Algorithms Design* , John Wiley
3. Aho et al A.V., *“The Design and analysis of Algorithms*, Pearson Education

**B. Tech Semester V**  
**COMPUTER NETWORK**

**Course Code: ECS504**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** To familiarize students with the layered design and protocols of computer networks, including the Internet.

**Course Contents**

**Unit I**

**Introduction Concepts:** Goals and Applications of Networks, Components – Direction of Data flow – networks – Components and Categories – types of Connections – Topologies – Protocols and Standards – ISO / OSI model – Transmission Media – Coaxial Cable – Fiber Optics, ISDN.

**(Lectures 08)**

**Unit II**

**Medium Access Sub Layer:** Medium Access sub layer - Channel Allocations- ALOHA protocols, Error – detection and correction – Parity – LRC – CRC – Hamming code – flow Control and Error control - stop and wait – go back-N ARQ – selective repeat ARQ- sliding window – HDLC - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 – FDDI - SONET – Bridges.

**(Lectures 08)**

**Unit-III**

**Network Layer:** Internet works – Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Routers

**(Lectures 08)**

**Unit IV**

**Transport Layer:** Duties of transport layer – Multiplexing – Demultiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of Services (QoS) – Integrated Services.

**(Lectures 08)**

**Unit V**

**Application Layer:** Domain Name Space (DNS), File Transfer, Access and Management, Electronic mail, Virtual Terminals, WWW – Security – Cryptography.

**(Lectures 08)**

**Text Books**

1. Forouzan, *Data Communication and Networking*, TMH
2. Achyut S Godbole, *Data Communications & Networks*, TMH
3. Behrouz A. Forouzan, *TCP/IP Protocol Suit*.

**Reference Books**

1. Stallings W., *Data and Computer Communication*, Macmillan Press
2. A.S. , *Computer Networks*, Prentice Hall India, 1997.
3. Keshav S. “*An Engineering Approach on Computer Networking*, Addison Wesley
4. Larry L. Peterson & Peter S. Davie, *Computer Networks*, Harcourt Asia Pvt. Ltd.

**B. Tech Semester V**  
**ERP SOLUTION**

**Course Code: ECS505**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** the objective of this course is to familiarize students with the ERP solutions

**Course Contents**

**Unit I**

ERP Overview, Benefit, Business Process Reengineering, Data ware Housing, Data Mining, LAP, Supply chain Management.

**Unit II**

ERP -A Manufacturing Perspective, ERP Module, ERP Market, ERP implementation life cycle, Options of various paradigms, Identification of suitable platforms, Role of SDLC/SSAD, Object oriented architecture.

**Unit III**

ERP Implementation, Hidden costs, Vendors, Consultant Employees, Human Resource

**Unit IV**

ERP & E-Commerce, Future Directives- in ERP, ERP and Internet, Critical Factors guiding selection and evaluation, Strategies for successful implementation, Impediments and initiatives to achieve success, Critical success and failure factors, Integrating ERP into organizational culture.

**Unit V**

Using ERP tool: either SAP or ORACLE format to case study.

**Text Book**

1. Alexis Leon, *ERP Demystified*, Tata McGraw Hill

**Reference Book**

1. Sadagoan, *ERP A Managerial Perspective*, Tata McGraw Hill

**B. Tech. Semester V**  
**ACCOUNTING AND FINANCIAL MANAGEMENT**

**Course Code: EHM502**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The basic purpose of this paper is to learn the basic Accounting concepts, Ratio Analysis, & Double entry system.

**Course Contents**

**Unit I**

**Overview:** Accounting concepts, Conventions and Principles; Accounting Equations, International accounting principles and standards; Matching of Indian accounting standards with International accounting standard

**(Lectures 08)**

**Unit II**

**Mechanics of Accounting:** Double entry system of accounting, journalizing of transactions; Preparation of final accounts, P/L Accounts, P/L Appropriation account and Balance Sheet, Policies related with depreciation, Inventory and Intangible assets like Copyright, Trademark, Patent and Goodwill.

**(Lectures 08)**

**Unit III**

Analysis of financial statement; Ratio analysis- solvency ratios, Profitability ratios, Activity ratios, Liquidity ratios, Market capitalization ratios, Common size statement; Comparative balance sheet and Trend analysis of Manufacturing, Service & Banking organisations

**(Lectures 08)**

**Unit IV**

**Funds flow statement:** Meaning; Concept of Gross and Net Working Capital; Preparation of schedule of change in working capital; Preparation of funds flow statement and its analysis

**(Lectures 08)**

**Unit V**

**Cash flow statement:** Various cash and non-cash transaction, Flow of cash, Preparation of cash flow statement and its analysis.

**(Lectures 08)**

**Text Books**

1. Bhattacharya S K & Dearden John, *Accounting for Management*, Vikas Publishers.
2. Jain S P & Narang K.L., *Advanced Accounting*, Kalyani Publishers.

**Reference Books**

1. S N & Maheshwari S.K., *Corporate Accounting*, Vikas Publishers.
2. Robert Anthony & Hawkins, *Accounting Test and Cases*, Richard D Irwin London.

**B. Tech. Semester V**  
**ENGLISH COMMUNICATION V**

**Course Code: EHM501**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

**Course Contents**

**Unit I (Lectures 08)**

Letter Writing: Informal and Formal letters, Writing Invitations, Letter of acceptance, declining the invitations, Letter-writing skills, Process of letter Writing, Forms, Structure, Style and tone.

Letter written to the Editor of a Newspaper.

**Unit II (Lectures 08)**

Official Letters: Essentials for good official correspondence, Different types of official correspondence and their drafting, Drafting D.O. letters, Semi official letters, circulars, Memos, Government Letters, Letters to authorities.

**Unit III (Lectures 08)**

Business Communication: Essentials of good commercial correspondence, components of commercial correspondence, Different types of commercial correspondence and their drafting, Letter of enquiring, Letter of sales, Letter of Credit, Collection of money, order, Complaint, claim and adjustment letter, Letters to insurance companies, banks, etc.

**Unit IV (Lectures 08)**

Bio-data Making, Resumes, Writing Job Applications.

**Unit V (Lectures 08)**

Value Based Reading

Essays: "A Bookish Topic", R.K.Narayan

"Of Studies", Francis Bacon

"The Civilization of Today", CEM Joad

**Texts Books**

1. Singh R.P, *An Anthology of English Essays*, Oxford University Press, New Delhi.
2. Ruther Ford A., *Basic Communication Skills*, Person Education, New Delhi.

**Reference Books**

1. Arora V.N. et al, *Improve Your Writing*, OUP, Delhi.
2. Mohan K. & Sharma R.C, *Business Correspondence of Report Writing*, TMH, New Delhi.

**B. Tech. Semester V**  
**ANALYSIS AND DESIGN OF ALGORITHMS (LAB)**

**Course Code: ECS552**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

Write Programs in C/C++ for

1. Creation of a binary search tree and insertion & deletion into it.
2. Creation of a Red Black tree and all the associated operations
3. Implementing an AVL tree and all the associated operations
4. Multiplication of two matrices using Strassen's Matrix Multiplication
5. Solving Knapsack problem.
6. Implementing shortest path algorithms (Dijkstra's and Bellman Algorithm).
7. Finding the minimum cost Spanning Tree in a connected graph.
8. Solving 8 Queen's problem.
9. Finding the number of connected components in a Graph.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination



**B Tech Semester V**  
**COMPUTER NETWORK (LAB)**

**Course Code: ECS553**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

1. Implementation of the Data Link Layer framing method such as character stuffing and bit stuffing in C.
2. Implementation of CRC algorithm in C.
3. Implementation of a Hamming (7,4) code to limit the noise. We have to code the 4 bit data in to 7 bit data by adding 3 parity bits. Implementation will be in C.
4. Implementation of LZW compression algorithm in C.
5. Write a socket program in C to implement a listener and a talker.
6. Simulation of a network of 3 nodes and measure the performance on the same network.
7. Write a program in C to encrypt 64-bit text using DES algorithm.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination

**B Tech Semester V**  
**ORACLE E-BUSINESS SUIT**  
**ERP (Lab)**

**Course Code: ECS554**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Projects are as follows (Implement any one)**

1. Shopping cart project using ADO.NET: This sample project has all basic features required for a shopping cart web site including Login, Registration, Add to Cart, Checkout etc. A good ASP.NET learning project using C#, ASP.NET, SQL Server.
2. Personal Assistant: This is a small project for managing personal details. Current version of this project support AddressBook feature - Add, Edit and Manage contacts and addresses using VB.NET.
3. Address Book: This is a small project for managing contact details. This is a C# version of the 'Personal Assistant' project.
4. School Management System: This is a project for managing education institutes using C#.
5. Library Management System: This is an academic project for students using Java.
6. Pider Alerts & Web services: This project communicates with web services and downloads Alerts from the web server using Java & XML.
7. Patient Information System: This software can be used to keep track of the patients" information and treatment details in a hospital or clinic. Some of the advanced features include patient consulting, lab information, billing etc using JSP, Servlet & JDBC.
8. eb based Address Book: This application can be used to keep track of your contacts/addresses. N Tier architecture is used to separate data layer, business layer and UI layers.
9. Installation of TOMCAT web server. Convert the static web pages of assignments 2 into dynamic web pages using servlets and cookies.
10. Do the assignment 7 using JSP by converting the static web pages of assignment 2 into dynamic web pages. Create database with User Information and Item information. The Item catalog should be dynamically loaded from the database.
11. Implementation of "Hello World!" program using JSP Struts Framework

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination

## **B. Tech Semester V INDUSTRIAL TRAINING**

**Course Code: ECS591**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **Guidelines:**

Students will go for Industrial training of four weeks in any industry or reputed organization after the IV semester examination in summer. The evaluation of this training shall be included in the V semester evaluation.

The student will be assigned a faculty guide who would be the supervisor of the student. The faculty would be identified before the end of the IV semester and shall be the nodal point for coordination of the training.

Students will also be required to prepare an exhaustive technical report of the training during the V semester which will be duly signed by the officer under whom training was taken in the industry/organization. The covering format shall be signed by the concerned office in-charge of the training in the industry. The officer-in-charge of the trainee would also give his rating of the student in the standard University format in a sealed envelope to the Director of the college.

The student at the end of the V semester will present his report about the training before a committee constituted by the Director of the College which would comprise of at least three members comprising of the Department Coordinator, Class Coordinator and a nominee of the Director. The students guide would be a special invitee to the presentation. The seminar session shall be an open house session. The internal marks would be the average of the marks given by each member of the committee separately to the Director in a sealed envelope.

The marks by the external examiner would be based on the report submitted by the student which shall be evaluated by the external examiner and cross examination done of the student concerned.

Not more than three students would form a group for such industrial training/ project submission.

The marking shall be as follows.

### **Internal: 100 marks**

By the Faculty Guide - 50 marks

By Committee appointed by the Director – 50 marks

### **External: 100 marks**

By Officer-in-charge trainee in industry – 50 marks

By External examiner appointed by the University – 50 marks

**B. Tech. – Semester V**  
**DISCIPLINE & GENERAL PROFICIENCY**

**Course Code: ECS571**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Guidelines**

There shall be continuous evaluation of the student on the following broad parameters:

1. Observance of dress code
2. Participation in Conferences /Workshops / Seminars
3. Attendance in guest lectures, invited talks and special technical sessions organized from time to time..
4. Participation in community projects including NCC and NSS.
5. Exhibiting team spirit in different activities of the University and College organized from time to time.
6. Observance of rule & regulations in the College/University.
7. Behaviour in hostel mess and hostel.
8. Performance and awards received in different events (sports/ co-curricular activities) organized at College / University and other level.
9. General behaviour

The above is an indicative list of parameters on which the students shall be continuously evaluated. The college may evaluate the student on the specific parameters by informing them through a notice displayed on the notice board before evaluation.

There shall be no external examination for this course; however the marks shall be included for calculation of cumulative Performance Index (CPI)

## B. Tech. Semester VI JAVA PROGRAMMING

Course Code: ECS602

L	T	P	C
3	2	0	4

**Objective:** To make the students aware of the basics of internet. To provide a deep insight into Object Oriented Programming through Java. To use rich inbuilt set of classes to develop GUI systems. To master internet programming through Applets and JSP.

### Course Contents

#### Unit I

**Internet:** Internet, Connecting to Internet: Telephone, Cable, Satellite connection, Choosing an ISP, Introduction to Internet services, E-Mail concepts, Sending and Receiving secure E-Mail, Voice and Video Conferencing. (Lectures 08)

#### Unit II

**Core Java:** Introduction, Operator, Data type, Variable, Arrays, Control Statements, Methods & Classes, Inheritance, Package and Interface, Exception Handling, Multithread programming, I/O, Java Applet, String handling, Networking, Event handling, Introduction to AWT, AWT controls, Layout managers, Menus, Images, Graphics. (Lectures 08)

#### Unit III

**Java Swing:** Creating a Swing Applet and Application, Programming using Panes, Pluggable Look and feel, Labels, Text fields, Buttons, Toggle buttons, Checkboxes, Radio Buttons, View ports, Scroll Panes, Scroll Bars, Lists, Combo box, Progress Bar, Menus and Toolbars, Layered Panes, Tabbed Panes, Split Panes, Layouts, Windows, Dialog Boxes, Inner frame.

**JDBC:** The connectivity Model, JDBC/ODBC Bridge, java.sql package, connectivity to remote database, navigating through multiple rows retrieved from a database.

(Lectures 08)

#### Unit IV

**Java Beans:** Application Builder tools, The bean developer kit(BDK), JAR files, Introspection, Developing a simple bean, using Bound properties, The Java Beans API, Session Beans, Entity Beans, Introduction to Enterprise Java beans (EJB), Introduction to RMI (Remote Method Invocation) A simple client-server application using RMI. (Lectures 08)

#### Unit V

**Java Servlets:** Servlet basics, Servlet API basic, Life cycle of a Servlet, Running Servlet, Debugging Servlets, Thread-safe Servlets, HTTP Redirects, Cookies, Introduction to Java Server pages (JSP).

(Lectures 08)

### Text Books

1. Margaret Levine Young, *The Complete Reference Internet*, TMH
2. Naughton, Schildt, *The Complete Reference JAVA2*, TMH

### References Books

1. Balagurusamy E., *Programming in JAVA*, TMH
2. Dustin R. Callway, *Inside Servlets*, Addison Wesley
3. Mark Wutica, *Java Enterprise Edition*, QUE
4. Steven Holzner, *Java2 Black Book*, Dreamtech

## B. Tech. Semester VI COMPUTER GRAPHICS

Course Code: ECS603

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** To understand the basics of Computer Graphics, Visual Data processing, various mathematical concepts used in displaying graphics. Focusing on various algorithms used for manipulating images. A light introduction to various animation techniques.

### Course Contents

#### Unit I

Introduction, Application, Areas of Computer Graphics, overview of graphics systems.

**Graphics primitives:** video-display devices, and raster-scan systems, random scan systems, Plasma displays, LCD, Plotters, printers, graphics monitors and workstations and input devices, input techniques. (Lectures 08)

#### Unit II

**Output primitives:** Points and lines, line drawing algorithms, circle and ellipse algorithms.

**Filled area primitives:** Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms (Lectures 08)

#### Unit III

**2-D geometrical transforms:** Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.

**2-D viewing:** The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm. (Lectures 08)

#### Unit IV

**3-D object representation:** Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon-rendering methods.

**3-D Geometric transformations:** Translation, rotation, scaling, reflection and shear transformations, composite transformations. 3-D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping. (Lectures 08)

#### Unit V

**Visible surface detection methods:** Classification, back-face detection, depthbuffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods. (Lectures 08)

### Text Books

1. Hearn Donald & Pauline Baker M., *Computer Graphics C version*, Pearson Education
2. Foley C, Van Dam, Feiner & Hughes, *Computer Graphics Principles & Practice*, Pearson.
3. Harrington Steven, *Computer Graphics*, TMH.

### Reference Books

1. Hearn Donald & Pauline Baker M., *Computer Graphics*, PHI
2. Zhigand Xiang, Roy Plastock, Schaum's outlines, *Computer Graphics Second Edition*, Tata Mc-Graw Hill

## B. Tech Semester VI MICROPROCESSOR

Course Code: ECS604

L	T	P	C
3	2	0	4

**Objective:** Micro processor is in the core of a computer system. The objective of the paper is to give the basic knowledge of different micro processors, used in the computer.

### Course Contents

#### Unit I

**Computer Number Systems, Codes, and Digital Devices:** Computer Number Systems and Codes, Microprocessor Evolution and Types, the 8086 microprocessor family-overview, 8086 internal architecture, introduction to programming the 8086, addressing modes of 8086.

**Family Assembly Language Programming:** Program Development Steps, Constructing the machine codes for 8086 instructions, writing programs for use with an assembler, assembly language program development tools

(Lectures 08)

#### Unit II

**Implementing Standard Program Structures in 8086 Assembly Language:** Simple Sequence Programs, Jumps, Flags, and Conditional Jumps, If-Then, if-then-else, and multiple if-then-else programs, while-do programs, repeat-until programs, instruction timing and delay loops

(Lectures 08)

#### Unit III

**Strings, Procedures, and macros:** the 8086 string instructions, writing and using procedures, writing and using assembler macros 8086 Instruction Descriptions and Assembler Directives

(Lectures 08)

#### Unit IV

**8086 System Connections, Timing, and Troubleshooting:** A basic 8086 microcomputer System, An example Minimum-mode System, the SDK-86, Troubleshooting a simple 8086-based microcomputer, Timing Diagrams

**8086 Interrupts and Interrupt Applications:** 8086 interrupts and Interrupt Responses, Hardware Interrupt Applications

(Lectures 08)

#### Unit V

Interfacing 8086 with 8255, 8254, 8259, 8253, 8251, 8259, 8279. Brief Introduction to Architecture of 80186, 80286, 80386, 80486, 8087 and Pentium architecture

(Lectures 08)

### Text Books

1. Hall V., *Microprocessors and Interfacing*, TMH, 1999.
2. James. L. Antonaks, *An Introduction to the Intel Family of Microprocessors*, Addison Wesley.
3. Gibson Liu, *Microprocessor Systems: The 8086/8088 Family Architecture, Programming & Design*, PHI.

### References Book

1. Able Peter, *IBM PC Assembly Language Programming*, PHI, 1994.

## B. Tech. Semester VI SOFTWARE PROJECT MANAGEMENT

Course Code: ECS609

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The main objective of this course is to provide students with a broad perspective on system analysis and design. Understand the difference between the Project Life Cycle, and a Product or System Life Cycle. Explain the process of managing an information system project, and how the commercial packages can be used to assist in representing and managing the project schedules, skill may be needed to accomplish the process. To introduce current Project Management concepts and principles as a foundation for practicing Project Management.

### Course Contents

#### Unit I

**Introduction to Software Project Management:** Software development as a project, Stakeholders in software project, Software product process, resources, quality, and cost, Objectives, issues, and problems relating to software projects **(Lectures 08)**

#### Unit II

**Overview of Project Planning:** Steps in project planning, Defining scope and objectives, work breakdown structure, Deliverables and other products, time, cost, and resource estimation, Alternatives in planning **(Lectures 08)**

#### Unit III

**Project Evaluation:** Strategic assessment, Technical assessment, Cost-benefit analysis, Cash flow forecasting, Cost-benefit evaluation techniques, Break-even analysis, Risk evaluation. **(Lectures 08)**

#### Unit IV

**Selection of Appropriate Project Approach:** Choosing development technology and methodology, choice of process model, Rapid application development, Waterfall model, V-process model, Spiral model, Prototyping, Incremental delivery. **(Lectures 08)**

#### Unit V

**Software Effort Estimation:** Problem in software estimation, Effort estimation techniques, Expert judgement, Estimation by analogym, Delphi technique, Algorithmic methods, Top-down and bottom-up estimation, Function point analysis, Object points, COCOMO model. Software Quality Assurance: Planning for quality, Product versus process quality management, Procedural and quantitative approaches, Defect analysis and prevention, Statistical process control, Pareto analysis, Causal analysis, Quality standards, ISO 9000, Capability Maturity Model, Quality audit. **(Lectures 08)**

### Text Books

1. Bob Hughes and Mike Cotterell, *Software Project Management*, McGraw-Hill
2. Jalote, Pankaj, *Software Project Management in Practice*, Pearson Education Asia.

### Reference Books

1. Roger S. Pressman, *Software Engineering: A practitioner's Approach*, McGraw-Hill
2. Robert T. Futrell, Donald F. *Quality Software Project Management*, Pearson Education Asia.
3. Gopalaswamy Ramesh, *Managing Global Software Projects*, Tata McGraw-Hill



**B. Tech. Semester VI**  
**JAVA PROGRAMMING (LAB)**

**Course Code: ECS652**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

1. Write a program in Java for illustrating, overloading, over riding and various forms of inheritance.
2. Write programs to create packages and multiple threads in Java.
3. Write programs in Java for event handling Mouse and Keyboard events.
4. Using Layout Manager create different applications.
5. Write programs in Java to create and manipulate Text Area, Canvas,
6. Scroll Bars, Frames and Menus using swing/AWT.
7. Using Java create Applets.
8. Use Java Language for Client Server Interaction with stream socket connections.
9. Write a program in java to read data from disk file.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination

**B. Tech. Semester VI**  
**COMPUTER GRAPHICS (LAB)**

**Course Code: ECS653**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

Write program in any suitable language

1. Write a program to draw a line using DDA algorithm.
2. Write a program for implementing Bresenham's algorithm for line generation.
3. Write a program for generation of circle.
4. Write a program to demonstrate Cohen-Sutherland line clipping method.
5. Write a program to implement Sutherland-Hodgeman polygon clipping algorithm.
6. Write a program to rotate a triangle. (By asking the user to input the coordinates of the Triangle and the angle of rotation).
7. Write a program to perform one point perspective projection of an object.

**Note: Students are advised to use C, C++ language for writing program; Use of open GL is desirable.**

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination

**B. Tech. Semester VI**  
**SOFTWARE PROJECT MANAGEMENT (LAB)**

**Course Code: ECS654**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

1. Write a LISP Program to solve the water-jug problem using heuristic function.
2. Create a compound object using Turbo Prolog.
3. Write a Prolog Program to show the advantage and disadvantage of green and red cuts.
4. Write a prolog program to use of BEST-FIRST SEARCH applied to the eight puzzle problem.
5. Implementation of the problem solving strategies: Forward Chaining, Backward Chaining, Problem Reduction.
6. Write a Lisp Program to implement the Steepest-Ascent Hill Climbing.
7. Write a Prolog Program to implement Counted Propagation Network.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination

**B. Tech. Semester VI**  
**E-COMMERCE AND ERP SYSTEM**

**Course Code: ECS605**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** To understand the modern day e-commerce applications and how they are implemented physically. To understand the working of various protocols used in e-commerce applications.

**Course Contents**

**Unit I**

Introduction of E-Commerce, Brief history of E-Commerce, Advantages and disadvantages, Type of E-commerce, E-business vs. E-commerce, Industry Framework. Network Infrastructure for E-Commerce, Component of I-way, Network Access Equipment, Broad band Telecommunication, ISDN.

Introduction of Mobile commerce, Mobile computing framework, Wireless application protocol, Mobile Information devices, Mobile computing application (Lectures 08)

**Unit II**

Introduction of WWW and Internet, Security issues on web, Introduction to firewall, Types of firewall, Advantage and disadvantage of firewall. Client server network security, Client server security threats, client server security schema.

Introduction to Network Security, Cryptography, Secret key cryptography, Public key cryptography, DES, (Lectures 08)

**Unit III**

Electronic payment systems, types of electronic payment systems, Digital tokens, smart cards, credits cards, magnetic strip cards, E checks, online banking, Risk and electronic payment system. Introduction and application of EDI, legal, security and privacy issues, EDI and e-commerce, Value added network (Lectures 08)

**Unit IV**

Introduction of ERP, Evolution of ERP, ERP Definition, Reason for the growth of ERP market, the advantage of ERP, Integrated Management information, Business modeling, Integrated Data model. (Lectures 08)

**Unit V**

ERP & related technologies- Business process reengineering, Management Information system, Decision support system, Executive information system, Data warehousing, Data mining, OLAP, Supply chain management. ERP modules, Benefits of ERP, ERP implementation life cycle, future description of ERP (Lectures 08)

**Text Books**

1. Kalakota, *Frontiers of E-Commerce*, Addison Wesley Long Man Publishers 1999.
2. Leon Alexis, *Enterprise Resource Planning*, TMH, 2000

**Reference Books**

1. Sadagopan S., *Enterprise Resource Planning*, Tata McGraw Hill, 1999.
1. Bajaj Kamlesh & Nag Debjani, *E-Commerce: The Cutting Edge of Business*, TMH, 2000.

## B. Tech. Semester VI REAL TIME OPERATING SYSTEM

Course Code: ECS606

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The aim is to impart the basic knowledge among the students about Real Time System. Through which they can understand the concepts, along with that it have various case studies which will be helpful for its better understanding.

### Course Contents

#### Unit I

Introduction to Real Time Systems, Priorities, Embedded Systems, Task, Classification & Requirements, Deadlines, Soft Real Time System, Hard Real Time System. **(Lectures 08)**

#### Unit II

Firm Real Time Systems, Introduction to Real Time Operating Systems, Task Management, Inter Process Communication, Case Studies of Maruti II, HART OS, VRTX etc. **(Lectures 8)**

#### Unit III

Characterizing Real Time Systems and Task, Task Assignment & Scheduling Theory, Fixed and Dynamic. Priority Scheduling Uniprocessor (RM and EDF), Multiprocessor (Utilization Balancing, Next-fit for RM & Bin-Packing Assignment for EDF) Scheduling **(Lectures 8)**

#### Unit IV

Programming Languages and Tools, Real Time Databases Real Time Communication, FDDI, Specification and Verification using Duration Calculus, Flow Control, Protocols for Real Time (VTCSMA, Window, IEEE 802.3, IEEE 802.4, IEEE 802.5, Stop and Go Protocol, Media Access Protocol). **(Lectures 8)**

#### Unit V

Fault, Fault Classes, Fault Tolerant Real Time System, Clocks, Clock Synchronization, Issues in Real Time Software Design. **(Lectures 8)**

### Text Books

1. Krishna, C.M., *Real Time Systems*, McGraw Hill
2. Jane W.S. Liu, *Real Time Systems*, Pearson Education Asia

### Reference Books

1. Levi & Agarwal, *Real Time Systems*, McGraw Hill
2. Mathi & Joseph, *Real Time System: Specification, Validation & Analysis*, PHI

## B.Tech. Semester VI SOFT COMPUTING

Course Code: ECS607

L	T	P	C
3	2	0	4

**Objective:** This paper caters the need of soft computing which includes neural Network and Fuzzy Logic. This course is ideal for working professional engineers, medical/biology majors & anyone with a specialist background. Here the fundamental understanding of emerging field of fuzzy neural network and its application into various areas is covered.

### Course Contents

#### Unit I

**Neural Networks:** History, overview of biological Neuro - system, Mathematical Models of Neurons, ANN architecture, Learning rules, Learning Paradigms-Supervised, Unsupervised and reinforcement Learning ANN training Algorithms-perceptions, Training rules, Delta, Back Propagation Algorithm, Multilayer Perception Model, Hopfield Networks, Associative Memories, Applications of Artificial Neural Networks. (Lectures 08)

#### Unit II

**Fuzzy Logic:** Introduction to Fuzzy Logic, Classical and Fuzzy Sets: Overview of Classical Sets, Membership Function; Fuzzy rule generation. (Lectures 08)

#### Unit III

**Operations on Fuzzy Sets:** Compliment, Intersections, Unions, Combinations of Operations, Aggregation Operations. (Lectures 08)

#### Unit IV

**Fuzzy Arithmetic:** Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on Intervals & Numbers, Lattice of Fuzzy Numbers, Fuzzy Equations. Classical Logic, Multi-valued Logics, Fuzzy Propositions, Fuzzy Qualifiers, Linguistic Hedges. (Lectures 08)

#### Unit V

**Uncertainty based Information:** Information & Uncertainty, Non specificity of fuzzy & crisp sets, Fuzziness of Fuzzy Sets. (Lectures 08)

### Text Books

1. Simon Haykin, *Neural Networks*.
2. Kosko, *Neural Networks*,
3. Klir & Yuan, *Fuzzy Logic & Fuzzy Sets*,

### Reference Books

1. Kazuo Tanaka., *An Introduction to Fuzzy Logic for Practical Applications*.
2. Laurene V. Fausett , *Fundamental of Neural Networks*.

## B. Tech. Semester VI DISTRIBUTED SYSTEM

Course Code: ECS608

L	T	P	C
3	2	0	4

**Objective:** To understand the basic environment of distributed system and working of Client server computing.

### Course Contents

#### Unit I

**Characterization of Distributed Systems:** Introduction, Examples of distributed Systems, Resource sharing and the Web Challenges. System Models: Architectural models, Fundamental Models Theoretical Foundation for Distributed System: Limitation of Distributed system, absence of global clock, shared memory, Logical clocks, Lamport's & vectors logical clocks, Causal ordering of messages, global state, termination detection. Distributed Mutual Exclusion: Classification of distributed mutual exclusion, requirement of mutual exclusion theorem. (Lectures 08)

#### Unit II

**Distributed Deadlock Detection:** system model, resource Vs communication deadlocks, deadlock prevention, avoidance, detection & resolution, centralized dead lock detection, distributed dead lock detection, path pushing algorithms, edge chasing algorithms. Agreement Protocols: Introduction, System models, classification of Agreement Problem, Byzantine agreement problem, Consensus problem, Interactive consistency Problem, Solution to Byzantine Agreement problem, Application of Agreement problem, Atomic Commit in Distributed Database system. (Lectures 08)

#### Unit III

**Distributed Objects and Remote Invocation:** Communication between distributed objects, Remote procedure call, Events and notifications, Java RMI case study. Security: Overview of security techniques, Cryptographic algorithms, Digital signatures Cryptography pragmatics, Case studies: Needham Schroeder, Kerberos, SSL & Millicent. Distributed File Systems: File service architecture, Sun Network File System, The Andrew File System, Recent advances. (Lectures 08)

#### Unit IV

**Transactions and Concurrency Control:** Transactions, Nested transactions, Locks, Optimistic Concurrency control, Timestamp ordering, Comparison of methods for concurrency control. Distributed Transactions: Flat and nested distributed transactions, Atomic Commit protocols, Concurrency control in distributed transactions, Distributed deadlocks, Transaction recovery. Replication: System model and group communication, Fault - tolerant services, highly available services, Transactions with replicated data. (Lectures 08)

#### Unit V

**Distributed Algorithms:** Introduction to communication protocols, Balanced sliding window protocol, Routing algorithms, Destination based routing, APP problem, Deadlock free Packet switching, Introduction to Wave & traversal algorithms, Election algorithm. (Lectures 08)

### Text Book

1. Singhal & Shivaratri, "Advanced Concept in Operating Systems", McGraw Hill

### Reference Books

1. Coulouris, Dollimore, Kindberg, *Distributed System: Concepts and Design*, Pearson Ed.
2. Tel Gerald, *Distributed Algorithms*, Cambridge University Press

## B. Tech. Semester VI ENGLISH COMMUNICATION- VI

**Course Code: EHM601**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

**Objective:** the objective behind this course is to know about telecommunication network which helpful in telecommunication system.

### **Course Contents**

#### **Unit I** **(Lectures 06)**

Press Communication: Essentials of Press Communication, Different types of press communication and their drafting. Inviting Tenders, Press- note, Writing advertisements.

#### **Unit II** **(Lectures 06)**

Writing Brochures/Pamphlet, Writing Notices, Agenda for the meeting, writing minutes of the meeting, Itinerary Writing.

#### **Unit III** **(Lectures 06)**

Note – Making: make notes on a given passage, with the help of prepared notes write a short paragraph, and the conclusion drawn.

#### **Unit IV** **(Lectures 06)**

Reading Comprehension- Reading process, reading with a purpose; reading different kinds of texts/messages, reference materials, business documents, scientific and technical texts.

Reading speed, reading skills, word meaning recognition, guessing meaning from word structure and context, Eye reading and visual perception, scanning skimming, identifying central idea, recognizing main ideas, identifying writing patterns, Intensive reading skills, drawing inferences and conclusions.

#### **Unit V** **(Lectures 06)**

Value Based Reading

Essays: "Making Writing Simple", J.B. Priestley

"On Style", Jonathan Swift

"How should One Read a Book", Virginia Woolf.

### **Texts Books**

1. Singh R.P, *An Anthology of English Essays*, Oxford University Press, New Delhi.
2. Ruther Ford A., *Basic Communication Skills*, Person Education, New Delhi.
3. Cauvery. B, *Effective English for Engineering students*, Macmillan, New Delhi.

### **Reference Books**

1. Arora V.N. et al, *Improve Your Writing*, OUP, Delhi.
2. Mohan K. & Sharma R.C, *Business Correspondence of Report Writing*, TMH, New Delhi.



**B. Tech. – Semester VI**  
**DISCIPLINE & GENERAL PROFICIENCY**

**Course Code: ECS671**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Guidelines**

There shall be continuous evaluation of the student on the following broad parameters:

1. Observance of dress code
2. Participation in Conferences /Workshops / Seminars
3. Attendance in guest lectures, invited talks and special technical sessions organized from time to time..
4. Participation in community projects including NCC and NSS.
5. Exhibiting team spirit in different activities of the University and College organized from time to time.
6. Observance of rule & regulations in the College/University.
7. Behaviour in hostel mess and hostel.
8. Performance and awards received in different events (sports/ co-curricular activities) organized at College / University and other level.
9. General behaviour

The above is an indicative list of parameters on which the students shall be continuously evaluated. The college may evaluate the student on the specific parameters by informing them through a notice displayed on the notice board before evaluation.

There shall be no external examination for this course; however the marks shall be included for calculation of cumulative Performance Index (CPI)

## B. Tech. Semester VII ADVANCED JAVA

Course Code: ECS701

L	T	P	C
3	2	0	4

**Objective:** To understand the basics of java swing technology, using distributed objects through RMI Technology, Using java servlets for internet programming, Use of JSP for developing robust, secure and scalable websites, applying J2EE Architecture for 3 tiered distributed websites.

### Course Contents

#### Unit I

**Java Swing:** Creating a Swing Applet and Application, Programming using Panes, Pluggable Look and feel, Labels, Text fields, Buttons, Toggle buttons, Checkboxes, Radio Buttons, View ports, Scroll Panes, Scroll Bars, Lists, Combo box, Progress Bar, Menus and Toolbars, Layered Panes, Tabbed Panes, Split Panes, Layouts, Windows, Dialog Boxes, Inner frame. A GUI based on all these controls. **(Lectures 8)**

#### Unit II

**RMI Programming:** RMI basics, Client classes, Server classes, Generating stubs and Skeletons, using rmic. Networking java.net Package – Socket programming, creating a socket, establishing connection through sockets and passing data. A sample GUI chat application using Socket Programming **(Lectures 8)**

#### Unit III

**Servlet Programming:** Java Servlets – Servlet API, , Life cycle of a Servlet, Running Servlet through JSDK, Thread-safe Servlets, HTTP Redirects, Session Tracking, Cookies.

**JDBC:** The connectivity Model, JDBC/ODBC Bridge, java.sql package, connectivity to remote Database. Connecting to Oracle(8i,9i,10g) Databases, using Servlet to display Database records through a Login based HTML Form **(Lectures 8)**

#### Unit IV

**JSP – Java Server Pages:** Understanding the working of Server side Scripting, JSP Components, Java beans and JSP concepts, JDBC and JSP, Configuring JSP Server (Apache Tomcat) , Using JSP Implicit objects, JSP Actions, JSP-Java bean Scope, A sample website using JSP and Servlets. **(Lectures 8)**

#### Unit V

**J2EE Architecture in detail:** EJB Architecture & Design, EJB Container and its services, Working with EJB's – Session beans, Session beans and State, stateful and stateless session Beans, Entity Beans, Container Managed and Bean Managed persistence. EJB2.0 Specification, J2EE Applications, Using JRun, Using Weblogic and Websphere to deploy J2EE Applications. **(Lectures 10)**

### Text Book

1. Wrox, *Professional Java Server Programming*.
2. Horstmann Cay, *Core Java 2 Volume 2*.
3. Cornell Gary, *Advanced Features*, PHI
4. Jsp Sams , *James Goodwill*, Techmedia.

### Reference Books

1. Dustin R Callaway, *Inside Servlets*, Pearson Education
2. Schildt Herbert, *Complete Reference*, TMH
3. Horstmann Cay & Gary Cornell, *Core Java*, PHI
4. Holzner Steven, *Java2 Black Book*, Dreamtech

## B. Tech. Semester VII LINUX INTERNALS

Course Code: ECS705

L	T	P	C
3	2	0	4

**Objective:** To make students familiar with Linux operating system

### Course Contents

#### Unit I

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories, Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, more, less, creating and viewing files, using cat, file comparisons, View files, disk related commands, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down.

(Lectures 08)

#### Unit II

Essential linux commands Understanding shells, Processes in linuxprocess fundamentals, connecting processes with pipes, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority, scheduling of processes at command, batch commands, kill, ps, who, sleep, Printing commands, grape, fgrep, find, sort, Cal, banner, touch, file, file related commands- ws, sat, cut, grep, dd, etc. Mathematical commands- bc, expr, factor, units. vi editor

(Lectures 08)

#### Unit III

Shell programming Basic of shell programming, Various types of shell, shell programming in bash conditional and looping statements, case statements, parameter passing and arguments, Shell variables, shell keywords, Creating Shell programs for automate system tasks and report printing, use of grip in shell, ask programming.

(Lectures 08)

#### Unit IV

System administration Common administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using suggesting system information - host name, disk partitions & sizes, users, kernel. Backup and restore files.

(Lectures 08)

#### Unit V

Basic networking administration Setting up a LAN using Linux, choosing peer to peer vs client/server model, setting up an Ethernet LAN, configuring host computers, checking Ethernet connecting, connecting to internet, administration in a networked environment, common networking administrative tasks, the network file system, configuring Ethernet, initializing Ethernet Interface, ifconfig, netstat and netconfig commands a TCP/IP networks, DNS services, routing using Linux, SLIP & PPP services, UUCP.

(Lectures 08)

### Texts Books

1. Tackett Jack & David Gunter, *Using Linux*, PHI
2. Negus Christopher, *Red Hat Linux7.X Bible*, IDG Books India Ltd.

### References Books

1. Nicholas Wells, *Linux Installation and Administration*, Vikas Publishing.
2. Das Sumitaba, *Unix*.
3. Kanetkar Yashwant, *Nix Shell Programming*, BPB Publications,
4. Unleashed Techmedia, *Red Hat Linux*, (BPB Publications)

## B. Tech. Semester VII SOFTWARE TESTING

Course Code: ECS712

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** software testing is an evolving area in research. The objective of this paper is to give the details of software testing to students so that they can prepare themselves for this new area.

### Course Contents

#### Unit I

What is software testing and why it is so hard?, Error, Fault, Failure, Incident, Test Cases, Testing Process, Limitations of Testing, No absolute proof of correctness. **(Lectures 08)**

#### Unit II

**Functional Testing:** Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, Cause Effect Graphing Technique. **(Lectures 08)**

#### Unit III

**Structural Testing:** Path testing, DD-Paths, Cyclomatic Complexity, Graph Metrics, Data Flow Testing, Mutation testing. **(Lectures 08)**

#### Unit IV

**Reducing the number of test cases:** Prioritization guidelines, Priority category, Scheme, Risk Analysis, Regression Testing, Slice based testing

**Testing Activities:** Unit Testing, Levels of Testing, Integration Testing, System Testing, Debugging, Domain Testing. **(Lectures 08)**

#### Unit V

**Object Oriented Testing:** Issues in Object Oriented Testing, Class Testing, GUI Testing, Object Oriented Integration and System Testing.

Testing Tools: Static Testing Tools, Dynamic Testing Tools, Characteristics of Modern Tools.

**(Lectures 08)**

### Text Books

1. Perry William “*Effective Methods for Software Testing*” John Wiley & Sons, New York.
2. Tamres Louise, “*Software Testing*”, Pearson Education Asia, 2002
3. Robert V. Binder “*Testing Object-Oriented Systems-Models, Patterns and Tools*”, Addison Wesley, 1999.

### Reference Books

1. Cem Kaner, Jack Falk, *Testing Computer Software*, Nguyen Quoc, Van Nostrand Reinhold
2. Aggarwal K.K. & Singh Yogesh, *Software Engineering*, New Age International Publishers.
3. Beizer Boris, *Software Testing Techniques*, Van Nostrand Reinhold, New York.
4. Beizer Boris, *Black-Box Testing – Techniques for Functional Testing of Software and Systems*, John Wiley & Sons Inc.

**B. Tech. Semester VII**  
**ADVANCED JAVA (LAB)**

**Course Code: ECS751**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

1. Programs to create various swing controls on a swing Frame.
2. Using Layout Managers in JFrame and JApplets.
3. Developing a Chat Application Server using RMI
4. Programs to connect to different types of Databases using different Types of drivers.
5. Creating Servlets for communication with HTML pages.
6. Developing a Login form using servlets, JDBC and HTML(Request/response)
7. Developing sample dynamic JSP Pages.
8. using various types of Tags in JSP Pages – action tag, include tag, error page ,etc
9. Combining Java beans Technology with JSP.
10. Creation of user defined Tags plus custom tags.
11. Fetching Data from different types of data sources using JNDI
12. Installation of Various types of web servers for J2EE 1.4 – Sun Application server, JBoss, JRun, Weblogic and Websphere.
13. Running a J2EE Application from Tomcat Server and Websphere.
14. Creation of EJBs in the J2EE Applications.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination

**B. Tech. Semester VII**  
**DIGITAL IMAGE PROCESSING**

**Course Code: ECS703**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** This paper gives the details of the topics of digital image processing like digital image fundamental, image enhancement, image restoration, image compression, image segmentation etc

**Course Contents**

**Unit I**

**Digital Image Fundamentals:** representation - elements of visual perception - simple image formation model - Image sampling and quantization - basic relationships between pixels - imaging geometry. Review of matrix theory results: Row and column ordering - Toeplitz, Circulant and Block matrices. Review of Image transforms: 2D-DFT, FFT, Walsh, Hadamard, Haar, DCT and wavelet transforms.

**(Lectures 08)**

**Unit II**

**Image Enhancement:** Spatial domain methods: point processing - intensity transformations, histogram processing, image subtraction, image averaging; Spatial filtering- smoothing filters, sharpening filters. Frequency domain methods: low pass filtering, high pass filtering, homomorphic filtering. Generation of spatial masks from frequency domain specifications.

**(Lectures 08)**

**Unit III**

**Image Restoration:** Degradation model - Diagonalization of circulant and Block circulant matrices - Algebraic approaches- Inverse filtering - Wiener filter - Constrained Least squares restoration - Interactive restoration -Geometric transformations. Fundamentals of Colour image processing: colour models - RGB, CMY, YIQ, HIS - Pseudo color image processing - intensity slicing, gray level to color transformation.

**(Lectures 08)**

**Unit IV**

**Image Compression:** fundamentals- redundancy: coding, inter pixel, psychovisual, fidelity criteria, Models, Elements of information theory, Error free compression- variable length, bit plane, lossless predictive, Lossy compression- lossy predictive, transform coding. Fundamentals of JPEG, MPEG, Fractals.

**(Lectures 08)**

**Unit V**

**Image Segmentation:** Detection of discontinuities - point, line and edge and combined detection ; Edge linking and boundary description - local and global processing using Hough transform Thresholding - Region oriented segmentation - basic formulation, region growing by pixel aggregation, region splitting and merging - Use of motion in segmentation. Fundamentals of Representation and Description.

**(Lectures 08)**

**Text Books**

1. Gonzalez and Woods, *Digital Image Processing*, Pearson Education, 2002.
2. Jain Anil K., *Fundamentals of Digital Image Processing*, Pearson Education, 2003.
3. Mark Nelson, *The Data compression Book*, Jean- Loup Gailly, BPB Publications.

**References Books**

1. Pratt William K., *Digital Image Processing*, John Wiley & sons
2. Chanda & Majumdar, *Digital Image Processing and Analysis*, PHI.
3. Sonka M. Hlavac V., *Image Processing, Analysis and Machine Vision*, R. Boyle, Vikas Publishing House

**B. Tech. Semester VII**  
**MANAGEMENT INFORMATION SYSTEM**

**Course Code: ECS707**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The objective of this Paper is to give the Knowledge of information system in business. Also gives the view for several information system, its uses, its importance etc in every function of Business i.e. (strategy, planning, Control, operations etc). Also gives the knowledge of advanced concept of information systems such as SCM, CRM, ERP, Procurement

**Course Contents**

**Unit I**

**Foundation of Information Systems:** Introduction to information system in business, fundamentals of information systems, Solving business problems with information systems, Types of information systems, Effectiveness and efficiency criteria in information system. An overview of Management Information Systems. Definition of a management information system, MIS versus Data processing, MIS & Decision Support Systems, MIS & Information Resources Management, End user computing, Concept of an MIS, Structure of a Management information system. **(Lectures 08)**

**Unit II**

**System Analysis & Design:** System Analysis Design function, CASE Tools, Project Feasibility, Information Requirement & Decision Analysis, Preparing System Proposal, Input/Output design, Procedures & control design, System development, Testing & Quality assurance. **(Lectures 08)**

**Unit III**

**Concepts of Planning & Control:** Concept of organizational planning, The Planning Process, Computational support for planning, Characteristics of control process, the nature of control in an organization. **(Lectures 08)**

**Unit IV**

**Business Applications of Information Technology:** Internet & electronic commerce, Intranet, Extranet & Enterprise Solutions, Information System for Business Operations, Information System for Managerial Decision Support, Information System for Strategic Advantage. **(Lectures 08)**

**Unit V**

**Managing Information Technology:** Enterprise & global management, Security & Ethical challenges, Planning & Implementing changes. Advanced Concepts in Information Systems Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management, and Procurement Management. **Lectures 08)**

**Text Books**

1. Brian O, *Management Information System*, TMH
2. Gordon B. Davis & Margrethe H. Olson, *Management Information System*, TMH.

**Reference Books**

1. Brian O., *Introduction to Information System*, McGraw Hill.
2. Murdick, *Information System for Modern Management*, PHI.
3. Jawadekar, *Management Information System*, TMH.
4. Jain Sarika, *Information System*, PPM
5. Davis, *Information System*, Palgrave Macmillan



**B. Tech. Semester VII**  
**DIGITAL IMAGE PROCESSING (LAB)**

**Course Code: ECS753**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

1. Implement the spatial image enhancement functions on a bitmap image –
  - (a) Mirroring (Inversion)
  - (b) Rotation (Clockwise)
  - (c) Enlargement (Double Size)
2. Implement
  - (a) Low Pass Filter
  - (b) High Pass Filter
3. Implement
  - (a) Arithmetic Mean Filter
  - (b) Geometric Mean Filter
4. Implement Smoothing and Sharpening of an eight bit color image
5. Implement
  - (a) Boundary Extraction Algorithm
  - (b) Graham's Scan Algorithm
6. Implement
  - (a) Edge Detection
  - (b) Line Detection

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination



**B Tech Semester VII**  
**MANAGEMENT INFORMATION SYSTEM (LAB)**

**Course Code: ECS754**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments (Implement any one)**

1. Shopping cart project using ADO.NET: This sample project has all basic features required for a shopping cart web site including Login, Registration, Add to Cart, Checkout etc. A good ASP.NET learning project using C#, ASP.NET, SQL Server.
2. Personal Assistant: This is a small project for managing personal details. Current version of this project support Address Book feature - Add, Edit and Manage contacts and addresses using VB.NET.
3. Address Book: This is a small project for managing contact details. This is a C# version of the 'Personal Assistant' project.
4. School Management System: This is a project for managing education institutes using C#.
5. Library Management System: This is an academic project for students using Java.
6. Pider Alerts & Web services: This project communicates with web services and downloads Alerts from the web server using Java & XML.
7. Atient Information System: This software can be used to keep track of the patients" information and treatment details in a hospital or clinic. Some of the advanced features include patient consulting, lab information, billing etc using JSP, Servlet & JDBC.
8. eb based Address Book: This application can be used to keep track of your contacts/addresses. N Tier architecture is used to separate data layer, business layer and UI layers.
9. Installation of TOMCAT web server. Convert the static web pages of assignments 2 into dynamic web pages using servlets and cookies.
10. Do the assignment 7 using JSP by converting the static web pages of assignment 2 into dynamic web pages. Create database with User Information and Item information. The Item catalog should be dynamically loaded from the database.
11. Implementation of "Hello World!" program using JSP Struts Framework

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

## B. Tech. Semester VII ADVANCED COMPUTER NETWORKS

Course Code: ECS702

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The aim of this subject is to give knowledge about advanced concepts of networks to students. This includes important aspects of networks like mobile network, wireless networks, Ad Hoc networks, and advanced security issues.

### Course Contents

#### Unit I

**Introduction:** Overview of computer network, seven-layer architecture, TCP/IP suite of protocol, Ma protocols for high-speed LANS, MANs & WIRELESS LANs. (FDDI, DQDB, HIPPI, Gigabit Ethernet, Wireless Ethernet) Fast access technologies including ADSL and Cable Modem

(Lectures 08)

#### Unit II

**IPv6:** why IPv6, basic protocol, extension & option, support for Quality of Service, security, neighbor discovery, auto-configuration, routing. Change to other protocols. Application programming interface for IPv6, 6bone.

(Lectures 08)

#### Unit III

Mobility in network, Mobile Security related issues, IP Multicasting. Multicasting routing protocols, address assignments, session discovery

(Lectures 08)

#### Unit IV

**Ad Hoc Wireless Networks:** Introduction, Issues in Ad Hoc Wireless Networks, Ad Hoc Wireless Internet Routing Protocols, Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks, Classifications of Routing Protocols, Table-Driven Routing Protocols, On Demand Routing Protocols, Hybrid Routing Protocols, Routing Protocols with Efficient Flooding Mechanisms, Hierarchical Routing Protocols, Power-Aware Routing Protocols

(Lectures 08)

#### Unit V

Network security at various layers, Secure-HTTP, SSL, ESP, Authentication header, Key distribution protocols, Digital signatures and digital certificates

(Lectures 08)

### Text Books

1. Frouzan B. A., *Data Communication and Networking*, TMH
2. Siva C.& Ram Murthy & Manoj B.S., *Ad Hoc Wireless Networks: Architectures and Protocols* PHI
3. Stallings William, *Cryptography and Network Security*, PHI

### Reference Books

1. Stevens W. R. , *TCP/IP illustrated, Volume 1: The protocols*, Addison Wesley
2. Wright G. R. , *TCP/IP illustrated, Volume 2: The implementation*, Addison Wesley
3. Gast Matthew, *Wireless Networks: The Definitive Guide*, 802.11, 0" Reilly

**B. Tech. Semester VII**  
**INFORMATION STORAGE & RETRIEVAL**

**Course Code: ECS709**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** Information storage and management is the new concept in computer science field. Very few universities have adopted this paper in their course curriculum. This paper tells how the information is store and managed.

**Course Contents**

**Unit I**

**Complexity of Information Management:** Proliferation of Data, Data Center Evolution, Managing Complexity, I/O and the five pillars of technology, Storage Infrastructure, Evolution of Storage  
(Lectures 08)

**Unit II**

**Storage Systems Architecture:** Modern Storage Systems, Storage Systems, Intelligent Disk Subsystems, Physical Disks , Back End ,Cache ,Front End , Host Environment  
(Lectures 08)

**Unit III**

**Introduction to Networked Storage:** Storage Networking Overview, Direct Attached Storage, Storage Area Networks, Case study – Applying SAN concepts, Network Attached Storage, Case study – Applying NAS concepts, IP SAN, CAS, Hybrid Network Storage Based Solutions/ Emerging Technologies, Case study – Applying SAN, NAS, IP SAN concepts  
(Lectures 08)

**Unit IV**

**Introduction to Information Availability:** Business Continuity Overview, Data Availability, Business Continuity – Local, Case study – Applying local information availability strategies, Business Continuity – Remote, Case study – Applying remote information availability strategies, Disaster Recovery  
(Lectures 08)

**Unit V**

**Managing and Monitoring:** Monitoring in the Data Center, Case study – Monitoring exercise, Management in the Data Center, Case study – Managing exercise  
(Lectures 08)

**Text Book**

1. Marc Farley Osborne, *Building Storage Networks*, Tata Mc Graw Hill, 2001
2. Robert Spalding, *Storage Networks: The Complete Reference*, Tata McGraw Hill, 2003

**Reference Books**

1. NIIT, *Introduction to Information Security Risk Management*, Prentice-Hall of India, 2000

## B. Tech. Semester VII CRYPTOGRAPHY AND NETWORK SECURITY

Course Code: ECS710

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** Since the early stages of human civilization there has been a need to protect sensitive information from falling into wrong hands. To achieve this secrecy, mankind has relied on a branch of science known as cryptography.

### Course Contents

#### Unit I

**Introduction to Security:** Attacks, Services & Mechanisms, Security, Attacks, Security Services. Conventional Encryption: Classical Techniques, Conventional Encryption Model and Steganography, Classical Encryption Techniques. **(Lectures 08)**

#### Unit II

DES Standard, DES Strength, Block Cipher Design Principles, Block Cipher Modes Of Operation, Triples DES, Placement & Encryption Function, Key Distribution, Random Number Generation, Placement Of Encryption Function. **(Lectures 08)**

#### Unit III

**Public-Key Cryptography:** Principles Of Public-Key Cryptosystems, RSA Algorithm, Key Management, Fermat's & Euler's Theorem, Primarily, The Chinese Remainder Theorem. **(Lectures 08)**

#### Unit IV

**Message Authentication & Hash Functions:** Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Birthday Attacks, Security Of Hash Function & MACS, MD5 Message Digest Algorithm, Secure Hash Algorithm (SHA), Digital Signatures: Digital Signatures, Authentication Protocol, Digital Signature Standard (DSS), Proof Of Digital Signature Algorithm. **(Lectures 10)**

#### Unit V

Electronic Mail Security, Pretty Good Privacy (PGP), S/Mime, Security: Architecture, Authentication Header, Encapsulating Security Payloads, Combining Security Associations, Key Management, Web Security: Secure Socket Layer & Transport Layer Security, Secure Electronic Transaction (Set), System Security: Intruders, Viruses, Firewall Design Principles, Trusted Systems. **(Lectures 10)**

#### Text Book

1. Stallings William, *Cryptography and Network Security: Principles and Practice*, Prentice Hall.
2. Kahate Atul, *Cryptography and Network Security*, TMH

#### Reference Book

1. Johannes A. Buchmann, *Introduction to Cryptography*, Springer, Verlag.

**B.Tech.- Semester VII**  
**ENGLISH COMMUNICATION-VII**

**Course Code : EHM701**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

**Objective:** The objective of the course is to perk up the technical writing skills orator skill and public speaking.

**Course Contents**

**Unit I**

**Technical communication:** Nature, origin and scope: Features, difference between technical writing and general writing, Significance, style, Objective style as Contrary to Literary Composition, Forms of Technical communication, Distinction between formal and informal writing.

**(Lectures 06)**

**Unit II**

**Reports:** Types, Significance, Structure, Style of Report, Project report, thesis, Dissertation writing,

**(Lectures 06)**

**Unit III**

**Technical Paper and scientific article writing:** Elements, methods, and technical objectives.

Technical proposal: Nature, division, kinds & uses.

**(Lectures 06)**

**Unit IV**

**Oratory Skills and Public Speaking:** Basic steps in the practice of speech, analyzing audience, kinds of speeches, voice modulations, expressions, Developing the speech, Actual delivery.

**(Lectures 06)**

**Unit V**

Value Based Reading

**Essays:** "The Aims of Science and the Humanities", ME Prior  
"The Language of Literature and Science", A. Huxley  
"Man and Nature", J. Bronowski.

**(Lectures 06)**

**Texts Books**

1. Singh R.P, *An Anthology of English Essays*, Oxford University Press, New Delhi.
2. Cauvery. B, *Effective English for Engineering students*, Macmillan, New Delhi.

**Reference Books**

1. Mohan K. & Sharma R.C, *Business Correspondence of Report Writing*, TMH, New Delhi.
2. Chauhan, Abnish Singh, *Speeches of Swami Vivekananda & S.C. Bose: A Comparative Study*, Prakash Book Depot, Bareilly.
3. Krishna Mohan and Mamta Banerjee, *Developing Communication Skills*, Macmillan India Ltd., Delhi.

**\*Note:**

**Internal Marking**

There shall be a continuous evaluation and the marking would be as follows.

**Marks 50**

**Part A – 25 marks** Would be based on the pattern of internal evaluation of all theory papers viz two internal examinations of 7.5 marks each, regular assessment through tutorials and class assignments – 5 marks and attendance -5 marks.

**Part B – 25 marks** Students are required to read the daily word and sentence written on the White Board at the entrance of the college along with its meaning.

**10 marks** –Random class test would be held in the Classes which will be based on the words and sentences written on the white board only.

**15 marks**- Would be based on a project report that the student would write and would present the same to the committee comprising of three members to be appointed by the Director of the college.

The committee will assess the performance of the student on the basis of project done and presentation made before committee.

## **B. Tech. Semester VII INDUSTRIAL TRAINING**

**Course Code: ECS791**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Guidelines**

Students will go for Industrial training of six weeks in any industry or reputed organization after the VI semester examination in summer. The evaluation of this training shall be included in the VII semester evaluation.

The student will be assigned a faculty guide who would be the supervisor of the student. The faculty would be identified before the end of the VI semester and shall be the nodal point for coordination of the training.

Students will also be required to prepare an exhaustive technical report of the training during the VII semester which will be duly signed by the officer under whom training was taken in the industry/organization. The covering format shall be signed by the concerned office in-charge of the training in the industry. The officer-in-charge of the trainee would also give his rating of the student in the standard University format in a sealed envelope to the Director of the college.

The student at the end of the VII semester will present his report about the training before a committee constituted by the Director of the College which would comprise of at least three members comprising of the Department Coordinator, Class Coordinator and a nominee of the Director. The students guide would be a special invitee to the presentation. The seminar session shall be an open house session. The internal marks would be the average of the marks given by each member of the committee separately to the Director in a sealed envelope.

The marks by the external examiner would be based on the report submitted by the student which shall be evaluated by the external examiner and cross examination done of the student concerned.

Not more than three students would form a group for such industrial training/ project submission.

The marking shall be as follows.

### **Internal: 100 marks**

By the Faculty Guide - 50 marks

By Committee appointed by the Director – 50 marks

### **External: 100 marks**

By Officer-in-charge trainee in industry – 50 marks

By External examiner appointed by the University – 50 marks

**B. Tech. – Semester VII**  
**DISCIPLINE & GENERAL PROFICIENCY**

**Course Code: ECS771**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Guidelines**

There shall be continuous evaluation of the student on the following broad parameters:

1. Observance of dress code
2. Participation in Conferences /Workshops / Seminars
3. Attendance in guest lectures, invited talks and special technical sessions organized from time to time..
4. Participation in community projects including NCC and NSS.
5. Exhibiting team spirit in different activities of the University and College organized from time to time.
6. Observance of rule & regulations in the College/University.
7. Behaviour in hostel mess and hostel.
8. Performance and awards received in different events (sports/ co-curricular activities) organized at College / University and other level.
9. General behaviour

The above is an indicative list of parameters on which the students shall be continuously evaluated. The college may evaluate the student on the specific parameters by informing them through a notice displayed on the notice board before evaluation.

There shall be no external examination for this course; however the marks shall be included for calculation of cumulative Performance Index (CPI)



## B. Tech. Semester VIII

### WEB-TECHNOLOGY (DESIGN & ARCHITECTURE USING .NET)

Course Code : ECS801

L	T	P	C
3	2	0	4

**Objective:** To understand the basic of internet Programming and working of MS.NET Framework, Focus on rich inbuilt set of classes in .NET framework, how to develop secure and scalable internet applications and their deployment.

#### Course Content

##### Unit I

Introduction to Web Pages, Introduction to HTML, Designing static HTML Pages using various tags TextBox, Button, RadioButton, CheckBox, Text Area, Img, Links, Anchors, Table, Lists, DropDownList, etc. Form Submission using Get and Post Methods. Introduction to JavaScript, adding JavaScript to static HTML pages. Publishing a website.

(References: Sams Teach You: Web Publishing with HTML and CSS in One Hour a Day by Laura Lemay, Rafe Colburn, and Print ISBN-10: 0-672-32886-0 )  
**(Lectures 06)**

##### Unit II

Architecture of the .Net Framework Development Platform - Compiling Source Code into Managed Modules, Parts of a Managed Module – PE Header, CLR Header, Metadata, Intermediate Language(IL), Combining Managed Modules into Assemblies Loading the CLR, Executing the Assembly Code, The .Net Framework Class Library, Common Type System, Common Language Specification. Building, Packaging, Deploying, and Administering Applications and Types.

Reference: Applied Microsoft .NET Framework Programming, Jeffrey Richter ISBN 0-7356-1422-9  
**(Lectures 08)**

##### Unit III

Introduction to Visual Studio .Net, Installing the .Net Framework (2.0, 3.0 & 3.5) Installing the Visual Studio.Net IDE. Launching a Web Application through VS .Net IDE – Visual Basic ASP.Net Web Application, Visual C# ASP.Net Web Application.

Introduction to ASP.Net – ASP.Net and Web Forms, ASP.Net Applications, Application Configurations. ASP.Net Server Controls, Using standard controls. Using Rich Controls, Using Validation Controls.

**Reference: ASP.Net 3.5 Unleashed**

**(Lectures 10)**

##### Unit IV

Designing ASP.Net Websites – Using Standard Controls on Master Pages. Designing Websites with Themes, creating Custom Controls.

Introduction to ADO.Net, Connected vs Disconnected Data Access. Data Bound Controls, Data Source Controls, Connecting to third party Databases. Using SqlDataSource Control, Caching results, List Controls, GridView Control, Repeaters and DataList, ListView Control. **Reference-ASP.Net 3.5 Unleashed Sams Publication-Stephen Walther ISBN 0-672-33011-3**

**(Lectures 8)**

##### Unit V

Site Navigation – Navigation Control, Site Maps. Security Mechanism – Login Controls. Session Management. Localization and Globalization of your site. Introduction to AJAX.

Designing a Sample e-mail web application – using Master Page, Standard Controls, JavaScript, AJAX, Cookies and Sessions, Uploading files and Data Bound Controls such as GridView and Repeaters. **Reference: ASP.Net 3.5 Unleashed, Sams Publication-Stephen Walther Others**

**(Lectures 10)**

#### Text Books

1. ASP.Net , *C# Developers Guide*, Addison Wesley
2. ASP.Net, *Programming Bible*,
3. Laura Lemay, *Sams Teach Yourself: Web Publishing with HTML and CSS in One Hour a Day*, Rafe Colburn

#### Reference Books

1. Greg Hack, Jason Werry, *C#.Net Developers Guide*, Saurabh Nandu.
2. Robinson Simon, *C#*, Wrox Press Professional



## B. Tech. Semester VIII MOBILE COMPUTING

Course Code: ECS802

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** Today is age of wireless communication and mobile computing. This paper is introduced for giving the basics and advancements in this new field.

### Course Contents

#### Unit I

**Introduction to Personal Communication Services (PCS):** PCS architecture, Mobility management, Networks signaling. (Lectures 08)

#### Unit II

**Global system for Mobile Communication (GSM) system overview:** GSM Architecture, Mobility Management, Network signaling, General Packet Radio Services (GPRS): GPRS architecture, GPRS Network nodes. (Lectures 08)

#### Unit III

**Mobile Data Communication:** WLANs (Wireless LANs) IEEE 802.11 standard, Mobile IP. Wireless Application Protocol (WAP): The Mobile Internet standard, WAP Gateway and Protocols, Wireless Markup Languages (WML) (Lectures 08)

#### Unit IV

**Third Generation (3G) Mobile Services:** Introduction to International Mobile Telecommunications 2000 (IMT 2000) vision, Wideband Code Division Multiple Access (W-CDMA), and CDMA 2000, Quality of services in 3G. (Lectures 08)

#### Unit V

**Wireless Local Loop (WLL):** Introduction to WLL architecture, WLL technologies. Global Mobile Satellite Systems: Case studies of Iridium and Global star systems. Bluetooth technology and Wi-Max (Lectures 08)

### Text Books

1. Yi-Bing Lin & Imrich Chlamatac “*Wireless and mobile Networks Architecture*,” John Wiley & Sons, 2001.
2. Pandya Raj “*Mobile & Personnel communication Systems and Services*”, Prentice Hall India, 2001.
3. Schiller Jochen, “*Mobile communications*,” Pearson Education Pvt. Ltd., 2002.

### References Books

1. Hensmann, Merk, & Stober, *Principles of Mobile Computing*, Springer International Edition, 2003.
2. Talukdar & Yaragal, *Mobile Computing*, TMH, 2005.
3. Smith & Collins, *3G Wireless Networks*, TMH, 2007.
4. Theodore S. Rappaport “*Wireless Communication- Principles and Practices*, Pearson Education Pvt. Ltd, 2003.
5. Singhal & Bridgman et al., *The Wireless Application Protocol*, Pearson Education, 2004.

## B. Tech. Semester VIII MULTIMEDIA AND ANIMATION

Course Code: ECS805

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The objective is to impart the core knowledge of Multimedia Systems and Animation. It includes all basic concepts which are helpful for students to have the better understanding. Multimedia knowledge is very important these days because of its rapid expansion.

### Course Contents

#### Unit I

Evolution of Multimedia and its objects, Scope of multimedia in business & work, Production and planning of Multimedia applications. Multimedia hardware, Memory & Storage Devices, Communication Devices, Multimedia Software, Presentation and object generation tools, video, sound, Image capturing, Authoring Tools, Card & Page Based Authoring Tools.

(Lectures 12)

#### Unit II

Production and Planning of Multimedia building blocks, Text, sound (MIDI), Digital Audio, and Audio File Formats, MIDI under Windows environment, Audio & Video Capture.

(Lectures 08)

#### Unit III

Macromedia products, Basic drawing techniques, Advance animation techniques, Creating multi layer, Combining interactivity and multiple scenes, Creating transparency effects using text in Flash, Flash animation.

(Lectures 08)

#### Unit IV

Digital Audio Concepts, Sampling variables, Loss Less compression of sound, Lossy compression & Silence compression.

(Lectures 08)

#### Unit V

Multimedia monitor bitmaps, Vector drawing, Lossy graphic compression, Image file formatic animations Image standards, J P E G compression, Video representation, colors, video compression, MPEG standards, MHEG standard Multimedia Application Planning Costing Proposal Preparation and Financing case study of a typical industry

(Lectures 12)

### Text Books

1. Andreas Halzinger, *Multimedia Basics*, Firewall Media, New Delhi.
2. Tay Vaughan, *Multimedia Making It Work*, Tata McGraw Hill.
3. Buford, *Multimedia Systems*, Addison Wesley.

### References Books

1. Agarwal and Tiwari, *Multimedia Systems*, Excel.
2. Rosch, *Multimedia Bible*, Sams Publishing
3. Sleinreitz, *Multimedia Systems*, Addison Wesley
4. Ken Milburn, *Flash 4 Web Special Effects, Animation & Design Handbook*, John Croteau, Dreamtech Press.
5. John Villamil-Casanova & Louis Molina, *Multimedia-Production, Planning & Delivery*,

## B. Tech. Semester VIII WEB TECHNOLOGY LAB

Course Code: ECS852

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### List of Experiments

The students are advised to get exposed to web technologies like HTML, XML and their variants as well as Java Programming

1. Write HTML/Java scripts to display your CV in Web Browser.
2. Creation and annotation of static web pages using any HTML editor.
3. Write a program to use XML and JavaScript for creation of your homepage.
4. Write a program in XML for creation of DTD which specifies a particular set of rules.
5. Create a Stylesheet in CSS/XSL and display the document in Web Browser.
6. Write a Java Servlet for HTTP Proxy Server.
7. Use JSP pages for sharing session and application data of HTTP Server.
8. Write a program to use JDBC connectivity program for maintaining database by sending queries.

### Evaluation of Practical Examination:

#### Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

#### Evaluation Scheme

EXPERIMENT (25 MARKS)	ATTENDANCE (10 MARKS)	QUIZ ( 5MARKS)	VIVA (10 MARKS)	TOTAL INTERNAL ( 50 MARKS)
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#### External Evaluation (50 marks)

The external evaluation would be done by the external faculty based on the experiment conducted during the examination

**B Tech Semester VIII**  
**MULTIMEDIA AND ANIMATION (LAB)**

**Course Code: ECS856**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments:**

1. Create a cycle & name each part of cycle using different styles & format & animate text.
2. Draw seed & create small plant with use of at least 4 frames.
3. Create a forest of tree with flowers & fruits from a small plant using different layers & frame transition time.
4. Create a forest of trees using the object created earlier. Also add lighting and rain effect.
5. Insert audio to relevant frames that has lighting & rain effect.
6. Convert created work into file format which can be publish on web.
7. Interfacing digital- web-cam, capturing live image & editing using web-cam software.
8. Importing & exporting images, apply different image editing tools.
9. Mini Project: Students should create a movie of minimum 2 minutes playtime using either Flash or 3D-MAX or MAYA software.

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination.

## B. Tech. Semester VIII DIGITAL SYSTEM DESIGN

Course Code: ECS806

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** The objective of this paper is to give the concept of VHDL programming which help to design the chips that are used in computer architecture.

### Course Contents

#### Unit I

Specification of combinational systems using VHDL, Introduction to VHDL, Basic language element of VHDL, Behavioral Modeling, Data flow modeling, Structural modeling, Subprograms and overloading, VHDL description of gates. **(Lectures 08)**

#### Unit II

Description and design of sequential circuits using VHDL, Standard combinational modules, Design of a Serial Adder with Accumulator, State Graph for Control Network, design of a Binary Multiplier Multiplication of a Signed Binary Number, Design of a Binary Divider. **(Lectures 08)**

#### Unit III

Register- transfer level systems, Execution Graph, Organization of System, Implementation of RTL Systems, Analysis of RTL Systems, Design of RTL Systems. Data Subsystems, Storage Modules, Functional Modules, Data paths, Control Subsystems. **(Lectures 08)**

#### Unit IV

Micro programmed Controller, Structure of a micro programmed controller, Micro instruction Format, Micro instruction sequencing, Micro instruction Timing, Basic component of a micro system, memory subsystem. **(Lectures 08)**

#### Unit V

Overview of PAL, PLA, FPGA, CPLD. **(Lectures 08)**

### Text Books

1. Bhaskar J., *A VHDL Primer*, Addison Wesley, 1999.
2. Ercegovac M., *Introduction to Digital Systems*, T. Lang and L.J. Moreno, Wiley, 2000
3. Roth C. H., *Digital System Design Using VHDL*, Jaico Publishing, 2001

### Reference Books

1. Douglas L. Perry, *VHDL Programming by Examples*, TMH, 2000
2. Ghose Sumit, *Hardware Description Languages*, PHI, 2000
3. Ashendern P.J., *The Designer Guide to VHDL*, Morgan Kaufmann Pub. 2000
4. Zwolinski Mark, *Digital System Design with VHDL*, Prentice Hall Pub. 1999
5. Douglas J. Smith, *HDL Chip Design*, Doone Pub. 2001

## B. Tech. Semester VIII

### DATA WAREHOUSING AND DATA MINING

Course Code: ECS807

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** Effective decision making is essential for the success of any organization. The historical data of the organization is used for decision making and strategic planning. Data Warehouse is used to manage the old data and mining is used for finding the appropriate information for decision making.

#### Course Contents

##### Unit I

**Data Warehousing:** Introduction to Data Warehousing: Evolution of Data Warehousing, Data Warehousing concepts, Benefits of Data Warehousing, Comparison of OLTP and Data Warehousing, Problems of Data Warehousing. (Lectures 08)

##### Unit II

**Principles of dimensional modeling:** Objectives, From Requirements to data design, the STAR schema, STAR Schema Keys, Advantages of the STAR Schema

**Dimensional Modeling:** Updates to the Dimension tables, miscellaneous dimensions, the snowflake schema, aggregate fact tables, families of STARS (Lectures 08)

##### Unit III

**Data Warehousing Architecture:** Operational Data and Data store, Load Manager, Warehouse Manager, Query Manager, Detailed Data, Lightly and Highly summarized Data, Archive/Backup Data, Meta-Data, architecture model, 2-tier, 3-tier and 4-tier data warehouse. (Lectures 08)

##### Unit IV

OLAP definitions and rules, OLAP characteristics, major features and functions, general features, dimensional analysis, hyper cubes, Drill-down and roll-up, slice-and-dice or rotation, OLAP models (Lectures 08)

##### Unit V

**Data Mining Basics:** What is Data Mining, Data Mining Defined, The knowledge discovery process, OLAP versus data mining, data mining and the data warehouse, Major Data Mining Techniques, Cluster detection, decision trees, memory-based reasoning, link analysis, neural networks, genetic algorithms, moving into data mining, Data Mining Applications, Benefits of data mining. (Lectures 08)

#### Text Books:

1. Paul Raj Poonia, *Fundamentals of Data Warehousing*, John Wiley & Sons, 2004.
2. Inmon W. H., *Building the Operational Data Store*, John Wiley, 1999.

#### References Books:

1. Anahony Sam, *Data Warehousing in the Real World: A Practical Guide for Building Decision Support Systems*, John Wiley, 2004
2. Kamber and Han, *Data Mining Concepts and Techniques*, Hartcourt India

## B Tech Semester VII DIGITAL SYSTEM DESIGN LAB

Course Code: ECS857

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### List of experiments

1. Understand the requirements of full- and semi-custom CMOS logic design (A).
2. Design and layout full custom logic blocks (B).
3. Understand the requirements of PAL, PLA and FPGA logic architectures for logic synthesis (A).
4. Understand the important trade-offs between different implementation styles (A, B).
5. Design a FSM from an algorithmic description of a problem (B).
6. Design the data path for a RISC processor and synthesize the control logic (A,B,C).

### Evaluation of Practical Examination:

#### Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

#### Evaluation Scheme

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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#### External Evaluation (50 marks)

The external evaluation would be done by the external faculty based on the experiment conducted during the examination

**B Tech Semester VII**  
**DATA MINING AND DATA WAREHOUSING LAB**

**Course Code: ECS 858**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**List of Experiments**

**Algorithms:**

1. Implement Inferring rudimentary rules
2. Implement Statistical modeling
3. Implement Divide-and-conquer: constructing decision trees
4. Implement Covering algorithms: constructing rules
5. Implement Mining association rules
6. Implement linear models

**Evaluation of Practical Examination:**

**Internal Evaluation (50 marks)**

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a scale of 5 which would include the practical conducted by the students and a Viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

**Evaluation Scheme**

<b>EXPERIMENT (25 MARKS)</b>	<b>ATTENDANCE (10 MARKS)</b>	<b>QUIZ ( 5MARKS)</b>	<b>VIVA (10 MARKS)</b>	<b>TOTAL INTERNAL ( 50 MARKS)</b>
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**External Evaluation (50 marks)**

The external evaluation would be done by the external faculty based on the experiment conducted during the examination



## B. Tech. Semester VIII SIMULATION AND MODELING

Course Code: ECS803

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** This subject aims at analysis of problems before implementing it through simulation techniques and to predict the performance of system by providing historical data with the use of computers. It is one of the emerging fields and currently all large projects go for simulation.

### Course Contents

#### Unit I

System definition and components, stochastic activities, continuous and discrete Systems, System modeling, types of models, static and dynamic physical models, Static and dynamic mathematical models, Full corporate model, types of system study. **(Lectures 08)**

#### Unit II

System simulation, Why to simulate and when to simulate, Basic nature of simulation, technique of simulation, comparison of simulation and analytical methods, types of system simulation, real time simulation, hybrid simulation, simulation of pure-pursuit problem single-server queuing system and an inventory problem, Monte Carlo simulation, Distributed Lag models, Cobweb model. **(Lectures 08)**

#### Unit III

Simulation of continuous systems, analog vs. digital simulation, simulation of water reservoir system, simulation of a servo system, simulation of an autopilot Discrete system Simulation, Fixed time-step vs. event-to-event model, generation of random numbers, Test for randomness, Generalization of non-uniformly distributed random numbers, Monte-Carlo computation vs. stochastic simulation. **(Lectures 08)**

#### Unit IV

System dynamics, exponential growth models, exponential decay models, modified exponential growth models, logistic curves, generalization of growth models, System Dynamics diagrams, Feedback in Socio-Economic systems, world model. **(Lectures 08)**

#### Unit V

Simulation of PERT networks, Critical path computation, uncertainties in Activity duration, Resource allocation and consideration, Simulation software, Simulation languages, continuous and discrete simulation languages, Expression based languages, object-oriented simulation, general-purpose vs. application-oriented simulation packages, CSMP-III, MODSIM-III. **(Lectures 08)**

#### Text Books:

1. Gordon Geofrey, *System Simulation*, PHI
2. Deo Narsingh, *System Simulation with Digital Computer*, PHI
3. David W. Kelton, *Simulation Modeling and Analysis*, TMH

#### Reference Book

1. Banks, *Discrete Event System Simulation*, Carson, PHI

## B. Tech. Semester VIII EMBEDDED SYSTEMS

**Course Code: ECS804**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>2</b>	<b>0</b>	<b>4</b>

**Objective:** This paper give the details of the topics of embedded system like introduction to embedded system, interrupt basics, survey of software architecture, inter-task communication, embedded software development tools, debugging techniques, etc.

### **Course Contents**

#### **Unit I**

Introduction to embedded systems hardware needs; typical and advanced, timing diagrams, memories (RAM, ROM, and EPROM) Tristate devices, Buses, DMA, UART and PLD's Built-ins on the microprocessor. Interrupts basics, ISR; Context saving, shared data problem. Atomic and critical section, Interrupt latency. **(Lectures 08)**

#### **Unit II**

Survey of software architectures, Round Robin, Function queue scheduling architecture, Use of real time operating system. RTOS, Tasks, Scheduler, Shared data reentrancy, priority inversion, mutex binary semaphore and counting semaphore. **(Lectures 08)**

#### **Unit III**

Inter task communication, message queue, mailboxes and pipes, timer functions, events Interrupt routines in an RTOS environment. Embedded system software design using an RTOS Hard real-time and soft real-time system principles, Task division, need of interrupt routines, shared data. **(Lectures 08)**

#### **Unit IV**

Embedded Software development tools. Host and target systems, cross compilers, linkers, locators for embedded systems. Getting embedded software in to the target system. **(Lectures 08)**

#### **Unit V**

Debugging techniques. Testing on host machine, Instruction set emulators, logic analysers In-circuit emulators and monitors. **(Lectures 08)**

### **Text Books**

1. Simon David A., *An Embedded Software Primer* Pearson Education.

### **Reference Book**

2. Lewis Daniel W., *Fundamentals of Embedded Software Where C and Assembly Meet*, Pearson Education.

## B. Tech. - Semester VIII

### ENGLISH COMMUNICATION VIII

Course Code : EHM801

L	T	P	C
3	0	0	3

**Objective:** The objective behind the course is to develop the professionalism in students through teaching the listening comprehension, Presentation strategies, and the skills of good speaking.

#### Course Contents

##### Unit I

**Spoken English:** Phonemes, Allophones, Phonetic Symbols, Phonetic transcription, Vowel, Consonants sounds, Stress, rhythm, intonation. (Lectures 06)

##### Unit II

**Listening Comprehension:** The Listening process, Hearing and Listening, Types of Listening, Listening with a purpose, Barriers to Listening, Effective Listening Strategies, Comprehension of Speech, Reproduction of response, Note-taking. (Lectures 06)

##### Unit III

**Presentation Strategies:** Defining Purpose, Audience and locale, Audio- visual aids, Preparing outline, Time dimension, organizing, Nuances and delivery, Body Language- space, Setting nuances of voice dynamics. (Lectures 06)

##### Unit IV

**The Skills of Good Speaking:** Improving voice and Speech, Art of public speaking/conversation, Using visual aids, Job Interviews, Being interviewed by the media, Dealing with the Boss, Dealing with Subordinates, How to run a meeting. (Lectures 06)

##### Unit V

Value Based Reading

**Essay:** "The Mother of Sciences", A.J.Bahm

"Science and Survival", Barry Commoner

"The Effect of Scientific Temper", Bertrand Russel.

(Lectures 06)

**\*Note: At the end of the eighth semester there will be a viva – voce of 50 Marks**

#### Texts Books

1. Cauvery. B, *Effective English for Engineering students*, Macmillan, New Delh
2. Sethi and Dhamija, *A Course in Phonetics and Written English*, Prentice Hall, New Delhi.

#### Reference Books

1. Arora V.N. et al, *Improve Your Writing*, OUP, Delhi.
2. Mohan K. & Sharma R.C, *Business Correspondence of Report Writing*, TMH, New Delhi.

#### \*Note:

#### Internal Marking

There shall be a continuous evaluation and the marking would be as follows.

#### Marks 50

**Part A – 25 marks** Would be based on the pattern of internal evaluation of all theory papers viz two internal examinations of 7.5 marks each, regular assessment through tutorials and class assignments – 5 marks and attendance -5 marks.

**Part B – 25 marks** Students are required to read the daily word and sentence written on the White Board at the entrance of the college along with its meaning.

**10 marks** -Random class test would be held in the Classes which will be based on the words and sentences written on the white board only.

**15 marks**- Would be based on a project report that the student would write and would present the same to the committee comprising of three members to be appointed by the Director of the college.

The committee will assess the performance of the student on the basis of project done and presentation made before committee.

## B. Tech. Semester VIII PROJECT WORK

**Course Code: ECS891**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>

**Guideline:**

Students based on their subject of choice should devote themselves to make a project which preferably should be a working model of their thoughts.

The student will be assigned a faculty guide who would be the supervisor of the student. The faculty would be identified before the end of the VI semester.

The project shall be finalized by the students before the start of the VII semester and shall be completed and submitted at least one month before the last teaching day of the VIII semester, date of which shall be notified in the academic calendar.

The assessment of performance of students should be made at least twice in each semester i.e. VII and VIII and each internal assessment shall be for 25 marks. The student shall present the final project live as also using overheads project or power point presentation on LCD to the internal committee as also the external examiner.

The evaluation committee shall consist of faculty members constituted by the college which would comprise of at-least three members comprising of the Department Coordinator, Class Coordinator and a nominee of the Director. The students guide would be a special invitee to the presentation. The seminar session shall be an open house session. The internal marks would be the average of the marks given by each member of the committee separately to the Director in a sealed envelope.

Not more than three students would form a group for such industrial training/ project submission.

The marking shall be as follows.

**Internal: 100 marks**

By the Faculty Guide - 50 marks

By Committee appointed by the Director – 50 marks

**External: 100 marks**

By External examiner appointed by the University – 100 marks

**B. Tech. – Semester VIII**  
**DISCIPLINE & GENERAL PROFICIENCY**

**Course Code: ECS871**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Guidelines**

There shall be continuous evaluation of the student on the following broad parameters:

1. Observance of dress code
2. Participation in Conferences /Workshops / Seminars
3. Attendance in guest lectures, invited talks and special technical sessions organized from time to time..
4. Participation in community projects including NCC and NSS.
5. Exhibiting team spirit in different activities of the University and College organized from time to time.
6. Observance of rule & regulations in the College/University.
7. Behaviour in hostel mess and hostel.
8. Performance and awards received in different events (sports/ co-curricular activities) organized at College / University and other level.
9. General behaviour

The above is an indicative list of parameters on which the students shall be continuously evaluated. The college may evaluate the student on the specific parameters by informing them through a notice displayed on the notice board before evaluation.

There shall be no external examination for this course; however the marks shall be included for calculation of cumulative Performance Index (CPI)